WINTER 1983

NAVY CIVIL Engineer

Cut building costs – reduce headaches with REDICHECK – Page 11

Workshop helps new COs make fast transition into new command – Page 18

New formula helps engineers improve writing – Page 25

Washington, D.C. a boring place? No true! See page 6

75 find new careers in Civil Engineer Corps

Seventy-five new officers joined the ranks of the U.S. Navy's Civil Engineer Corps on September 17, 1982, upon their graduation from the Naval School, Civil Engineer Corps Officers, Port Hueneme, Calif., and have accepted assignments world-wide.

The class, Number 164, completed eight weeks of specialized training pertinent to the Navy's needs for shore installation engineering, public works management, and Seabee operations.

In a ceremony held on the school's quadrangle, students, their families, along with the school's faculty and friends, listened to an inspirational talk by guest speaker RADM John Paul Jones, Jr., Vice Commander and Deputy Chief of Civil Engineers. The presentation of diplomas was made by RADM Jones and Captain James B. Caughman, Jr., Commanding Officer of the school.

Eleven students graduated with honors. Selection of one outstanding graduate and ten who graduated with distinciton was based upon overall performance throughout the entire course — basic and speciality portions.

Continued on back cover

Basic CEC Officers
Class No. 164

Freedom Knowledge Action
CECOS
U.S. NAVAL SCHOOL, CIVIL ENGINEER CORPS OFFICERS

Graduated
17 September 1982

• **ENS Matthew S. Gass**
BCE/Villanova U.
to Portsmouth, Va.

† **Bruce C. Alexander**
BSCE/Sacramento State
to Port Hueneme, Calif.

• **ENS Kevin C. Bailey**
BS Arch./Texas Tech.
to San Francisco, Calif.

ENS Stephen R. Baim
BSEE/Miss. State
to Colts Neck, N.J.

ENS Mark E. Banks
BS Res. Mgmt./USNA
to San Francisco, Calif.

• † **CW02 McLeod Banks, Jr.**
AA/Clemson U.
to Gulfport, Miss.

ENS James C. Barnett
BSME/Miss. State
to Jacksonville, Fla.

ENS Walter R. Beckman
BS Arch./Kansas State
to Parris Island, S.C.

• **ENS James V. Berotti, Jr.**
BSCE/Delaware U.
to Madrid, Spain

ENS David C. Bruner
BSCE/Tenn. Tech. U.
to Subic Bay, R.P.

• **ENS Robert J. Bullock**
BSE/Pennsylvania U.
to Bermuda

ENS David M. Burnes
BSRM/USNA
to Mayport, Fla.

• **ENS Catherine Calhoun**
BSOE/USNA
to Keflavik, Iceland

ENS Joseph A. Clements
BSME/Georgia Tech.
to Nea Makri, Greece

ENS William G. Cooper
BSGE/USNA
to Pensacola, Fla.

ENS John L. Crow
BSNE/Iowa State
to San Diego, Calif.

ENS Joseph M. Czajka
BSCE/Toledo U.
to Roosevelt Roads, P.R.

ENS Michael L. Denmon
BSCE/Central Florida Coll.
to Alexandria, La.

† **ENS Anthony DiDomenico**
BSSE/State U. of N.Y.
to Port Hueneme, Calif.

ENS Harold L. Dockins
BSEE/Prairie View A&M
to Gulfport, Miss.

ENS Mark E. Eckman
BS Chem. Eng./Miss. State
to Meridian, Miss.

ENS Charles W. Fanshaw
BSEE/VMI
to Bethesda, Md.

ENS David L. Fleisch
BS Arch./Cal. Poly.
to San Diego, Calif.

ENS Paul T. Fuligni
BSCE/Northwestern U.
to Sewells Point, Va.

ENS Kenneth W. Furra, Jr.
BSME/South Fla. U.
to Lemoore, Calif.

ENS Katherine L. Gregory
BSGE/USNA
to Yokosuka, Japan

† **ENS Brent A. Hagenbuch**
BSME/USNA
to Port Hueneme, Calif.

ENS Jeffrey M. Harper
BSCE/Northwestern U.
to Philadelphia, Pa.

ENS April M. Heinze
BSME/Virginia U.
to Pearl Harbor, Hawaii

• **ENS Hugh R. Hemstreet**
BSCE/Tulane U.
to Newport, R.I.

ENS Johnny S. Jarnagin
BSIE/Texas Tech.
to Oceana, Va.

ENS Scott L. Jones
MS Urb. Des./Columbia U.
to Keflavik, Iceland

ENS James W. Kaiser
BSCE/Kansas U.
to Monterey, Calif.

ENS Keith A. Kammerer
B. Arch./Rensselaer Poly.
to Vallejo, Calif.

Please turn to back cover

THE COVER

The cover of this issue is dedicated to Washington D.C., the seat of government. Rumor has it that some people have been reluctant to be assigned there because "there is nothing to do" and career opportunities there are limited. According to one Navy officer, these things are not true. There are many recreational opportunities – many of them free – and significant career experiences to look forward to. He tells his story on page 6.

NAVY CIVIL Engineer

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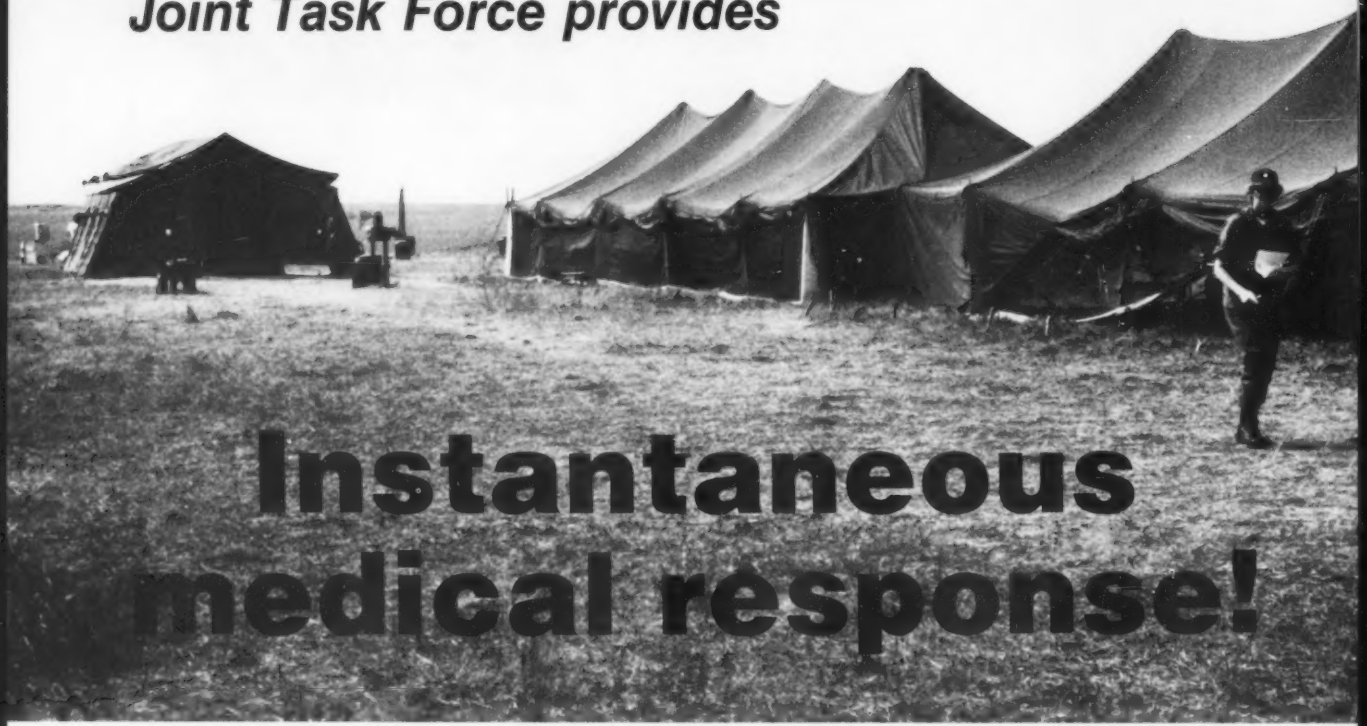
The Navy's Rapid Deployment Joint Task Force provides



Instantaneous medical response!

By LT ARTHUR D, AYARS, JR.
E.I.T., Calif.
Public Works, NAS

• Jacksonville, Fla.

The Rapid Deployment Joint Task Force (RDJTF) was developed to provide the United States with a mobile military force capable of reacting to worldwide crises requiring instantaneous response. One integral part of the RDJTF is the Rapidly Deployable Medical Facility (RDMF). The RDMF is composed of mobile field hospital units dedicated to providing complete in-the-field medical support to deployed forces.

The Navy is currently developing units for delivery to the fleet during the summer of 1983. However, in the interim, the Navy has procured several "mash" hospitals from the Army for contingency purposes.

Additionally, the Army was tasked to train a cadre of Navy personnel in the operation and maintenance of these field hospitals. In August of 1982, a team of Navy doctors, nurses, and engineers gathered at Fort Sill, Oklahoma, to receive two weeks of intensive hands-on training.

As one of four CEC officers selected to undergo this rigorous period, it soon became apparent that establishing and operating a field hopsital is a complex task. Armed with a group of 20 to 30 Seabees, the camp public works officer is challenged to provide various services in support of the command.

Furthermore, he is often uniquely qualified to identify and solve engineering problems which may arise. With his chiefs as counsel, the PWO must lead the way in devising and implementing systems essential to the successful attainment of the camp's mission.

This scenario offers a myriad of opportunities for the PWO to shoulder a large amount of responsibility while utilizing his own innovative ideas.

The plains of Oklahoma offer a hearty imitation of potential RDMF deployment sites. In mid-summer, temperatures fluctuate between 95 and 105 degrees and brisk winds create a constant shower of dust.

Because of the ever present threat of heat exhaustion in this environment, the availability of cool potable water is a constant concern. Personnel are encouraged to drink one quart per hour.

The Navy has procured several "Mash" type hospitals from the Army for contingency purposes. This one is at Fort Sill, Oklahoma.

Additionally, surgical procedures demand large quantities of ice. A hospital functioning at full capacity may require more than 45,000 gallons of water per day to support a 400-bed facility with a staff of seven hundred. Resident storage bladders may provide one day's supply in reserve. Thus, the logistics of transporting huge quantities of water over even relatively short distances is a critical issue.

The RDMF must rely on obtaining water from natural or local sources or from supporting logistic links. Given the uncertainty of the situation, water would probably be delivered to prearranged storage points within close proximity of the unit.

The PWO is responsible for ensuring that an adequate and ready supply of water exists on site at all times. To this

end, he must supervise daily water tanker runs to meet this need.

How does a tour with an RDMF unit differ from more traditional type deployments for CEC officers and Seabees? First, public works personnel comprise only four percent of total camp population. This requires that an extremely diverse and demanding workload must be accomplished with a limited number of skilled men. For this reason, it is imperative that the PWO exercise sound judgment in planning work schedules.

The officers and Seabees assembled at Fort Sill represented commands spread from the east coast to Hawaii. In an actual scenario, confusion and lost time caused by establishing a chain of command and learning each man's capabilities could not be tolerated. A force previously trained and dedicated to the RDMF seems appropriate.

Possibly in the future, construction battalion units may be assigned as the "ready" units for mobilization. The unity and strong leadership structure within the CBU would prove invaluable in the field.

Ultimately, reserve units may be assigned to fully man subsequent field hospitals. Projected growth points to an estimated patient capacity in excess of 10,000 beds. Current active duty numbers are insufficient to fill such a requirement.

It should be noted that the RDJTF is a force primarily dedicated to southwest Asia and the Persian Gulf regions of the world. Therefore, expected deployment sites will typically possess extremely rugged topographical terrain.

Geography impacts significantly upon logistic lines of support and unit mobility. Although pre-positioned supply depots will provide for initial logistic support of deployed forces, sustained operations require solid lines of communication thereby ensuring a reliable flow of consumable items.

ABOUT THE AUTHOR — A JUNE 1982 OUTSTANDING GRADUATE OF CECOS

LT Arthur (Doug) Ayars, Jr. graduated from the Naval School, Civil Engineer Corps Officers, Port Hueneme, Calif., in June 1982, Basic Class No. 163. LT Ayars was named the "Outstanding Graduate."

One might imagine the difficulty associated with conventional overland movement in a hot and arid climate. Maintenance of a limited number of vehicles by a small number of mechanics is cause for concern. One alternative would be to airlift necessary supplies to the field hospital.

However, this would demand a reasonable control of related air space and probable construction of landing zones for fixed wing aircraft. The feasibility of such a proposal is questionable.

Of equal concern is mobility of the field hospital. The PWO is tasked to organize this huge effort. He must devise a simple, but effective plan which includes details for disassembling, palletizing and loading all gear and camp personnel.

Work teams will consist largely of medical staff members directed by Seabees trained in the particulars of movement procedures. To complicate the situation, the field hospital must be mobile in only four to six hours regardless of prevailing climatic conditions. Additionally, the movement of patients requires special attention.

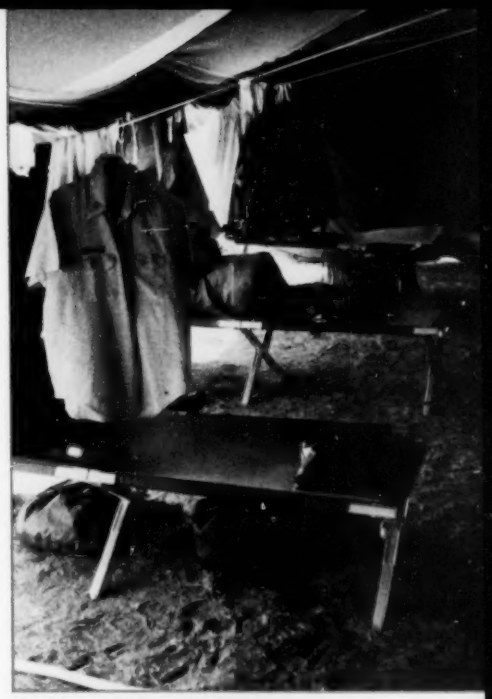
The problem of unit mobility contains many parameters which must be evaluated and then structured to form a viable solution. Timing and thorough training are the key factors for success.

Other traditional field problems must be managed on a regular basis. The public works department maintains a transportation and equipment pool capable of accomplishing various camp projects.

One project would be construction of a landfill for trash disposal. In addition to paper and metal refuse, consideration must be given to disposing of biological wastes generated by surgery.

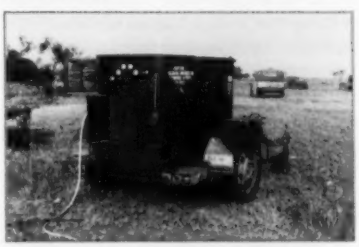
Although small in scale, for health and sanitation reasons, this project demands that a small dozer and one man be dedicated to this purpose. A front end loader with back hoe attachment is essential for other excavation requirements. Rough terrain fork lifts and trucks will perform everday tasks and logistic movement within the camp.

While the development of the RDMF is still in progress, the continued presence of the RDJTF in the United States' defense posture is a valid assumption. Consequently, the mobile field hospital will continue to evolve as a viable combat support unit. And with it, the CEC officer will be called upon to fill a vital position in ensuring mission success. □



All the comforts of home?

Camp mobility requires a sound understanding of palleting procedures.



60 kilowatt generators provide electricity in the field.

Hubbell "spiders" distribute electricity throughout the camp.

Firesafety for the hearing impaired

By HAL C. COHEN
Fire Protection Engineer
NAVFAC North Div
• Philadelphia, Pa.

In discussions of firesafety for the handicapped, the hearing impaired are usually left out. Most architectural designs and fire alarm systems do not consider persons in this group, perhaps because the plight of the hearing impaired is not as obvious as that of someone in a wheelchair. Although there has been little publicity about firesafety for the hearing impaired, their needs have not gone totally unnoticed.

As early as the 1930s inventions were developed to aid those whose hearing is impaired in emergency situations. Inventors have improved these patents throughout the years as more is learned about the needs of the hearing impaired. Reliable devices to aid them in a fire situation are now on the market and can be incorporated into today's building design concepts.

Once a potential fire condition has been announced, most handicapped people have difficulty in leaving a building. The major problem for the hearing impaired, however, lies in becoming aware that the potential fire condition exists.

Most early-warning fire alarm systems currently in use incorporate an audible signal. These systems are obviously of little use to the hearing impaired, and if they are sleeping or alone, the audible signal may be nothing more than deadly silence to them.

It is imperative that the hearing impaired be provided with fire alarm systems that utilize human senses other than hearing to warn them of dangerous situations. Sight is the most practical of the remaining human senses for use in such an alarm system.

One of the earliest devices that used a visual mode of communication to transmit a message was invented by William Conklin. On July 29, 1930, he was awarded a patent for "a device for transmitting intelligence, such, for example, as transmitting messages between ships, or it may be used by the deaf and dumb in conversation. . . ."

The invention consisted of lamps and lenses that, when activated, could produce various colors in various patterns. A color in a certain position could represent a letter of the alphabet, in the same way that a dot-and-dash pattern represents a letter in Morse Code.

This device could have been used to warn the hearing impaired of potential fire, although that was not its specified purpose.

The practicality of such a device was questionable, however, because of the time delay involved in understanding the message, and because of the mechanics of operation.

Conklin's concept of visual communication for the hearing impaired was advanced by Roland Zinsmeister's visual signaling system, which was awarded a patent on May 7, 1974. This system can be installed in the sleeping rooms, corridors, rest rooms, or any areas of a building that may be occupied by hearing-impaired persons.

The alarm system consists of units of three lights — usually red, green, and amber-colored — plus a brilliant strobe light, mounted on a zinc-plated steel box called a room signal indicator and connected to a central directory system.

When the system is in place and a smoke detector is activated, the room signal indicator's brilliant strobe light will flash, awakening the sleeper, followed by the red fire/emergency light to indicate potential danger. If the system is connected to a central annunciator panel, a light on the panel will indicate that a fire or emergency is in progress.

The alarm system could also notify the hearing impaired of a non-emergency situation. If the system were connected to a doorbell button, for example, pushing the button would cause the strobe light to flash, and then activate the green light.

This signaling system can be used in a variety of locations. The room signal indicators could be placed in all dormitory bedrooms at a school for the deaf. The brilliant strobe light would awaken sleeping students and a light would appear on an annunciator panel in a receptionist's area to alert school personnel to the emergency situation. The system could be modified as desired.

The use of strobe lights in an early warning system, rather than conventional incandescent lamps, has become a controversial subject. Keeran and Lakickas, applying for a patent for a strobe lamp warning apparatus in April 1980, gave an excellent analysis of the advantages and disadvantages of stroboscopic lighting.

Recently, strobe-type lights, i.e., gas discharge tubes, have been employed in the flashing warning light environment. These strobe-type lamps provide a number of significant advantages over the incandescent warning light systems described previously.

Among these advantages are high flash intensity; extremely long lamp life; solid-state circuitry and components for control of the lamp; elimination of moving parts such as electric motors, gear trains, and commutator

brushes; flexibility in the designed range of voltage and currents used in the operation of the lamps; rugged shock and vibration resistance; low power input requirements and minimal maintenance due to a long lamp life.

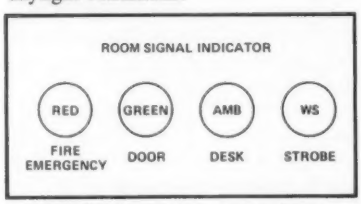
One disadvantage in the use of strobe-type lamps in warning lights systems is the extremely short duration of the flash. This disadvantage may not be significant in periods of darkness or low ambient light levels, but it does present a serious problem during periods of high ambient light, particularly in bright sunlight.

The problem results from the inability of the human eye and brain to acknowledge a flash of high intensity and short duration.

In bright sunlight, the eye pupils are closed down to accept a minimum amount of light. The normal strobe flash, even though of high intensity, is of such short duration that under bright ambient conditions, the human brain will not respond to it adequately for the flash to properly serve as a warning light.

At night, when the pupils of eyes are expanded to accept a maximum amount of light, the high intensity of the strobe flash at short distances can be somewhat blinding and confusing.

One area where an incandescent lamp appears to work better than a strobe light is in classrooms, which usually have brighter ambient lighting, especially sunlight. The longer duration or "dwell period" of the incandescent lamp gives it greater visual acceptance to the human eye and brain, and therefore greater value as a warning light compared to the strobe light in daylight conditions.



At Gallaudet College in Washington, D.C. (the world's only accredited liberal arts college for the deaf), the incandescent lamp in the classroom that is used as part of the emergency warning system is placed above the front door of the room, because the classroom seating arrangement causes the students to face the door. The light also stands out against the dark walls, making it more visible.

As demonstrated by Conklin's and Zinsmeister's visual communication systems, flashing lights can be a vital component of fire-warning systems. The flashing lights aid in attracting the attention of the hearing impaired, but may also have adverse effects on persons who suffer from epilepsy.

According to the Epilepsy Foundation of America, a flashing light can trigger an epileptic seizure in about six percent of those who suffer from epilepsy. The intensity of the lights is not a causative factor here. Merely waving one's hand past their eyes can trigger a seizure.

The Foundation indicated that the light-caused seizures are commonly caused by flashes ranging from 10 to 20 per second. Most visual signaling systems that incorporate flashing lights flash at rates below this range.

The American National Standards Institute standard ANSI A117.1 states that lights should not exceed five flashes per second. Kravontka, in a 1975 Fire Technology article, suggests a range from one to two and one-half flashes per second.

The 1981 Life Safety Code (NFPA 101) suggests that the flashing repetition of exit signs should be at approximately one cycle per second, and the duration of the off-time should not exceed one-quarter second per cycle.

Even though these design limits are well below the common range that could cause some epileptic seizures, the Epilepsy Foundation is still wary of these lights. Although 10 to 20 flashes per second is the range that triggers these seizures, the Foundation stresses that some epileptics can be affected by a rate of one flash per second.

This conflict between aiding the hearing impaired at the expense of potentially hurting some epileptics is one of the main stumbling blocks to the use of visual alarms in public places.

The 1981 Life Safety Code permits flashing exit signs upon activation of the fire alarm system. Although this is the first year that the NFPA has recognized flashing exit signs, systems employing such signs have been patented in other countries in the past few years.

In 1975, Thomas Industries of Canada patented a system that uses flashing exit signs. In this system, a smoke detector, when activated, triggers an audible alarm throughout the building plus a visual signal that directs the occupants to safe exits. When the detector activates, a loud and distinct sound emanates from the exit signs located near all the exit doors in the building.

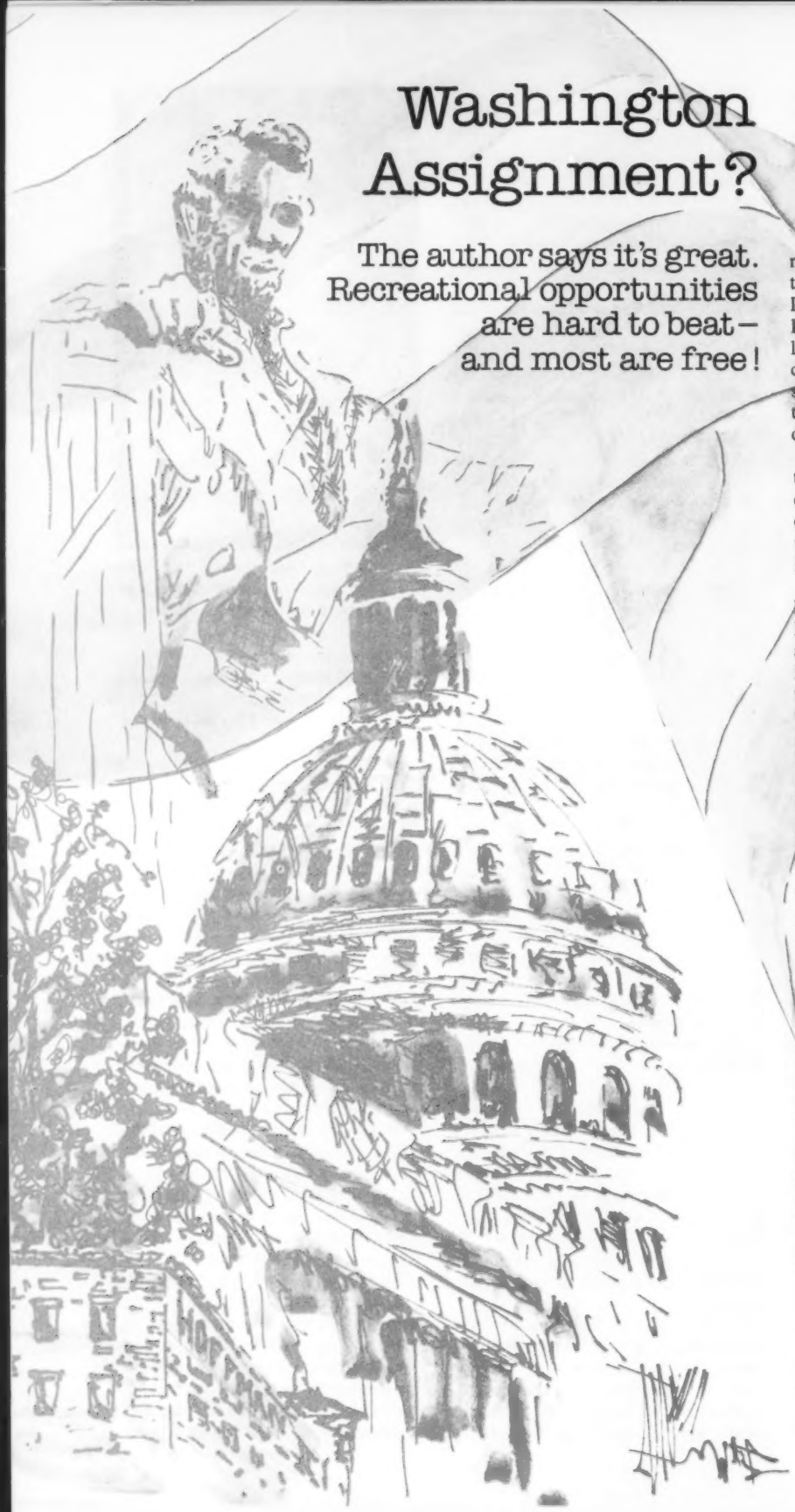
The major problem for the hearing impaired lies in becoming aware that the potential fire condition exists.

Also, the exit signs near the exit doors and the exit signs in the hallways, which point toward the exit doors, begin to flash. The combination of flashing lights and audible warnings increases the possibility of easy evacuation. As the patent states, "A light signal alone or a sound signal alone is inadequate."

Appendix A in the 1981 Life Safety Code states: "Flashing exit signs when activated with the fire alarm system may be of assistance to people with hearing impairments." Perhaps it should have stated the flashing signs may be of assistance to the public, especially to the hearing impaired.

In conclusion, firesafety for the hearing impaired is not an idea for the future; it is an actuality for today. Innovative, current inventions for the hearing impaired make it possible for us to seriously consider implementing visual alarm systems in public places.

But more research, possibly from companies manufacturing alarm systems, or by private consultants or research groups, must be done to expand on the basic ideas. The entire fire protection community should have an interest in helping the hearing impaired; today is an excellent time to start. □



Washington Assignment?

The author says it's great. Recreational opportunities are hard to beat—and most are free!

By LCDR T. A. LABOON, JR., CEC, USN
P.E., Pa.
Director, Environment Quality Division, NAVFAC
• Alexandria, Va.

Thoughts raced through my mind repeatedly when the detailer first contacted me about going to Washington, D.C. "Who me? To Washington, D.C.? It's not time to leave my current job. I like where I am and what I'm doing. I can't afford to live in Washington. Can't someone else go?" Certainly these are thoughts many have when talking to the detailer about going anywhere.

Despite the fact I didn't want to move to Washington, however, I'm glad that I did and would like to allay the concerns other junior officers may have about working and living in the Washington, D.C. area.

When first assigned to Washington, D.C., I was an AROICC at NAVPHIBASE Little Creek. I had been in the job about 18 months, had been in the Norfolk/Virginia Beach area for more than three years, and I was quite content to remain there. With this AROICC tour, I had my "ticket punched" in the four basic areas of the Civil Engineer Corps in that I had been with the Seabees, had been an APWO, worked on a subclaimant staff, and had been to graduate school.

Despite my contentment, the detailer assigned me to the Office of the Deputy Assistant Secretary of Defense for Energy, Environment, and Safety in the Pentagon. (This office has been reorganized and now is called Facilities, Environment, and Economic Adjustment.) It sounded like a big step compared to what I had been doing, and in many ways it was. I took the job, however, and I have not regretted one minute of it.

I went specifically to the Environmental Policy Office of OSD where all policies related to environmental issues for the Department of Defense (DOD) are originated. Oversimplified, the office essentially translates legislative and regulatory requirements into DOD directives and then ensures the military services' compliance with those requirements.

The office deals with many broad-based issues as well as helping to resolve issues which have been raised at the local installation level. Working in this directorate also provides one with regular

exposure to senior DOD officials.

There are several positive points to be made for this job. First of all, it provides an excellent education with respect to the functions of OSD and the interrelationships between the military services. One can observe the "system" at work from top to bottom and understand better how decisions are made and policies established.

Understandably, the "politics" behind many decisions is probably the most fascinating part of this process and yet can be the most difficult part to tolerate. Additionally, comparing the different ways in which the services approach a similar problem can be enlightening and occasionally is amusing!

Secondly, there is a tremendous amount of responsibility given to an individual and a great deal of flexibility to carry out those responsibilities. Somewhat naively, I was amazed to learn how easy it was to propose something to the Deputy Assistant Secretary and have him accept it and implement it.

At this level you are trusted to know what you are doing but also expected to do it correctly. One must realize that there is a two-edged sword here, however, with each side equally sharp. While there are many opportunities to excel, there are an equal number of opportunities to fail.

Thirdly, this job provides frequent interaction with other federal agencies such as the Environmental Protection Agency, the Department of Interior, the Council on Environmental Quality, and the Office of Management and Budget. In addition, there is considerable interaction with congressional staffs in this job which adds a completely different and interesting flavor.

I spent 2-1/2 very enjoyable years in OSD. Recently, I transferred to the Naval Facilities Engineering Command, Headquarters, as the Director for Environmental Quality where I hope to put the experience gained at OSD to good use.

How to get there is, in my opinion, a matter of qualifications, timing, and chance. Qualifications include educational background, experience, and past performance. Most of us have the education or we wouldn't even be in the CEC, although having an environmental background is preferred in the particular positions I have had.

Experience should be broad yet specific, if that seems possible. It should be broad in that you have been exposed to the various aspects of the Navy. This is why I believe it is important to get your "ticket punched" early in your career. It opens many doors to you that might otherwise be closed.

Experience should be specific so that you have knowledge of the budget process, for instance, (since "budgeteers" seem to run the show in the final analysis) and, of course, an interest in working in a particular area such as environment.

At the OSD level, where coordination with the military services is required and where your words have the potential to appear in print as DOD policy, it is imperative that one be able to communicate effectively and succinctly.

Have these assignments been worthwhile? Most definitely. And so are other assignments in Washington, D.C. Working in Washington, D.C. has been educational, exciting, and a real "eye-opener." It can raise one's self-confidence and remove much of the mystique junior officers associate with working with senior officials. Working as a staff member also will give a better insight into how policy decisions are made; this can be helpful when you are back at a field activity.

Living in the Washington, D.C. area, I think, is great! It isn't inexpensive to live here, but it's not impossible either. There are other places more expensive to live than Washington, D.C., so don't let the cost-of-living discourage you from seeking an assignment there. Furthermore, the recreational opportunities there are hard to beat anywhere in the country, and many of them are free!

Where does one go from here? There are few limitations on the type of job one can go to from Washington, D.C., provided the detailers can agree! Once you have built a solid base from which to work, a tour there only enhances your opportunities for interesting future assignments.

Here are some words of advice to my fellow junior officers that I found most applicable in my assignments in Washington, D.C.

- Don't be easily discouraged or intimidated in your work. If you have a good idea, speak up. Being senior doesn't mean one has all the good ideas.
- Be positive in your approach. Anyone can be negative.
- Participate. Join professional organizations, take part in committees at work, and participate in social functions with your colleagues. You will find more people willing to help you and work with you if they know you better and know that you are a "doer."
- Follow-up on actions for which you have responsibility. Don't let things slide; see things through to completion. This also will help you to realize more job satisfaction through your accomplishments. Finally,
- Ask for a job in Washington. I don't think you'll regret it! □

The Washington tourist's thumbnail starter

The newcomer to the Washington, D.C. scene, whether it be for two weeks or two years, should never find their interest sagging for lack of things to do. Washington is a veritable goldmine of interesting places, architecture, history, and events as well as fine cuisine, theaters and culture. The public attractions alone are enough to keep the short-time visitor busy for weeks, and those with two-year assignments for many months. Many of them are free!

Don't miss: Arlington National Cemetary; Bureau of Engraving and Printing; The Capitol (of course); The FBI Building; Ford's Theater (where President Lincoln was shot); the Government Printing Office; the Iwo Jima Statue (created by Felix de Weldon); The Library of Congress; the Lincoln Memorial; George Washington's home – Mount Vernon; the Museum of African Art; and the relatively new National Air and Space Museum.

An easy way to get acquainted with the Washington scene is to go "sightseeing" with one of the tour bus lines such as The Gray Line.

Interesting restaurants are bountiful with all price ranges. The night life is active and theater presentations always going on. For more information of this consult a freebe magazine entitled "Capitol."

One thing you will find to be true about Wasington, D.C. It's never boring or dull. It's a fun town!

Portable, cheaper, immediate

New way to measure liquid in tanks

By WILLIAM HOBSON, CUCM, USN
NAVFAC HQ
• Alexandria, Va.

A simplified and convenient method for measuring the volume of liquid in tanks and for calibrating installed measuring devices has been developed that has two important advantages: it provides immediate answers and it is cheaper.

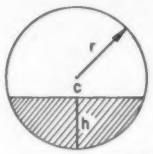
The information provided applies to any cylindrical tank, either vertical or horizontal. If your dipstick is broken or your tank has never been calibrated then this article will prove to be useful. All that is nesessary is a desk model computer programmed in basic or best of all, a programmable pocket calculator/computer. The great benefit of the programmable calculator is that it can be carried around to the various tanks to be measured. The measurement can be taken and quantity of fuel calculated without leaving the site.

Background

During my last tour of duty I had two tanks that were produced locally, well before the oil shortage and had not been calibrated for stick measurement. In the interest of controlling fuel inventory and attempting to prevent theft a weekly check was taken on each tank.

First, the measurements were taken and returned to the office to be calculated by hand. Calculation by longhand caused errors and consumed an inordinate amount of time. After receiving a Casio FX-502P calculator as an anniversary present, I saw the possibility of writing a program to calculate the volume of partially filled cylindrical tanks.

Writing a program was a simple chore using an available formula. The only problem was a cumbersome table of coefficients that had to be carried around with the calculator. The formula used was based on the principle that the end area of a horizontal cylindrical tank as shown in Figure 1 could be calculated by multiplying the chord, depth of liquid and coefficient. But, this relationship only applies up to a point where h = r. If the tank is over half-full then the relationship must be reversed and the problem solved by subtracting the void volume from the total volume.



$c = 2\sqrt{2rh - h^2}$

$A = c \times h$

$\times$ coefficient

Figure 1

Solution of Problem

Subsequently a program was written so that the quantity of liquid in any horizontal cylindrical tank could be calculated without a coefficient table. The solution for a vertical cylindrical tank is the simple

$$\text{Volume} = \pi r^2 h$$

formula and requires no special explanation.

Assume one end of a cylinder oriented as shown in Figure 2, the integration will be performed along the Y-axis.

Recall from analytic geometry the equation of a circle centered at any position (a,b) from the origin is

$$(x - a)^2 + (y - b)^2 = r^2$$

In the case shown in Figure 2, with the center located at a distance up the y-axis equal to the radius the formula becomes

$$(x - o)^2 + (y - r)^2 = r^2$$

and after taking the squares the equation takes the form of

$$x^2 + y^2 - 2ry + r^2 = r^2$$

Performing the algebra on the above equation and then solving for "x" we have

$$x = \pm \sqrt{2ry - y^2}$$

Therefore the chord length is equal to $2\sqrt{2ry - y^2}$. The reader will notice the equality of the derived chord to the textbook formula in Figure 1.

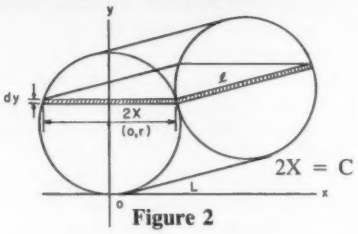


Figure 2

To set up for the integral we assume an infinitesimal area (2x)dy and solving for a finite volume we have that

$$\text{VOLUME} = 2\ \ell\ (x)\ dy$$

If the above formula is integrated between "o" and "h" we have

$$\text{VOLUME} = \int_o^h 2\ \ell\ (x)\ dy$$

Replacing x with its equivalent value from above, we get the integral

$$\text{VOLUME} = \int_o^h 2\ \ell \sqrt{2ry - y^2}\ dy$$

An integral of this type takes the form of

$$2\ \ell \left[\frac{y - r}{2} \sqrt{2ry - y^2} + \frac{r^2}{2} \sin^{-1} \frac{y - r}{r} \right]_o^h$$

Completing the integral solution and perfoming the necessary algebra the final formula for determining the volume of liquid at any depth in a horizontal cylindrical tank is

$$\text{VOLUME} = \ell \left[(h-r) \sqrt{2rh - h^2} + r^2 \sin^{-1} \frac{h - r}{r} + \frac{\pi}{2} r^2 \right]$$

Verification of Formula

For h = 0 take formula (2), substitute for h, and we have:

$$v = \ell \left[r^2 \sin^{-1}(-1) + \frac{\pi}{2} r^2 \right] =$$

$$\ell\left[-\frac{\pi r^2}{2}+\frac{\pi r^2}{2}\right] = 0$$

Again for h = r:

$$v = \ell\left[r^2\sin^{-1}(0) + \frac{\pi}{2}r^2\right] = \frac{\pi r^2}{2}\ell$$

And where h − 2r:

$$v = \ell\left[r^2\sin^{-1}(1) + \frac{\pi}{2}r^2\right] = \ell\left[-\frac{\pi r^2}{2}+\frac{\pi r^2}{2}\right] = \pi r^2\,\ell$$

Programming this (formula 2) on the now available pocket calculators/computers is a relatively simple task. Data entry, decision process (vertical or horizontal), and solution steps are only a matter of adjusting the formula to calculator language. After the volume is calculated the gallons/cubic foot conversion is applied and the final quantity is divided by 42 to obtain the answer in barrels.

Writing the steps to effect the decision on whether to calculate the volume as a horizontal or a vertical unit required the use of the fact that a vertical tank has no length. If the tank to be calculated is vertical a zero is entered into memory.

During run the memory is recalled and compared with zero, if it is equal to displayed data then the other values are treated as a vertical tank. If not the program switches and handles the data as a horizontal tank.

The greatest benefit to be derived from this program is the elimination of need for float gauges on tanks of small quantity. The price of a pocket programmable calculator/computer ranges from as low as $55.00 to as much as $500.00, but a unit with sufficient programming memory to handle this program will cost about $130.00.

Installing sight glasses or float gauges will probably cost near $500.00 for each tank to fabricate and install. Compared costs show a rather significant savings. The benefit of having an immediate answer in hand calculated from direct measurements is perhaps of the most value.

As a service to readers this program can be provided with conversion to any programmable calculator currently available. Simply send a request accompanied by a self-addressed/stamped envelope to the author at NAVFAC, Code 09M13, 200 Stovall Street, Alexandria, Virginia 22332. □

technical notes

departments

Prevent downspout damage: lessen accessability – increase resistance

Downspouts draining rainwater and melted snow from roofs of facilities with high occupant activity, such as Bachelor Enlisted Quarters, are often targets for deliberate acts of vandalism or subject to accidental damage.

Potential damage to downspouts can be reduced by decreasing accessibility of the downspout and increasing the damage resistance of the downspout. To this end, the following measures are recommended.

To decrease accessibility:

- For new construction, recess the downspout in the wall and cover with a protective plate.
- Install interior downspouts where possible (for interior installation, use cast iron pipe for areas where noise reduction is required).
- Locate the downspout away from an exterior corner to eliminate a convenient handhold for a person turning the corner.

- Locate the downspout away from an interior corner where it can become a climbing aid.
- Locate the downspout out of normal reach, or conversely, route the walkway farther away from the downspout.
- Protect the downspout with nearby plantings of thorn-covered or uninviting shrubbery.

To increase damage resistance:

- Use a square or rectangular downspout mounted close to the wall; these shapes will provide a less-secure handhold than downspouts with a circular cross-section.
- Use an impact-resistant material for the first 8-foot section above the ground (e.g., cast-iron, PVC, or sheet metal).
- Use extra mounting brackets in the first 8-foot section and attach to the wall with heavy-duty fasteners.

For additional information, contact Gary Cook, L64, Naval Civil Engineering Laboratory, Port Hueneme, Calif., Tel: Autovon 360-5927/4284; FTS 799-5927/4284; Comm (805) 982-5927/4284. □

an editorial

departments

By TED C. MURPHY
Professor Emeritus, CECOS

• Los Altos, Calif.

I was never cut out to be a hard charger (HC). I made an effort at the beginning because I noticed the deference paid them. I thought some of that would be nice. I didn't realize then that it wasn't deference I saw but dee-fense.

So at first I charged about, furiously doing inconsequential things, noisly giving orders and occasionally shouting angrily, red-faced, wearing a frown until my forehead hurt.

But after a few months of this I began to observe myself, more out of curiosity about the "new me" to start with, but then in amusement. The spectacle eventually became so ludicrous, then hilarious, that I relaxed, backslid all the way. My subordinates had to look elsewhere for entertainment; but I had learned something about HCs, first-hand.

HCs and high achievers cannot be mistaken one for the other. HC activities fall generally in the "body-count" category (they are specialists in finding and rooting out "deadwood": the only trouble is that their aim is so poor that anybody is liable to get hit) rather than producing any durable or significantly constructive benefit. No one claims that HC activity has much intellectual content; practitioners are of the management by meat-axe persuasion.

One expects an occasional CDR, LCDR, or even a LT to manifest HC motivations; but there can hardly be a more grotesque spectacle than a knuckle-dragging LTJG or ensign flailing about the military landscape. Few do; but I know of one ensign who, suffering from an over-dose of can-do, put hordes of enlisted men on report because they smiled when they saluted him.

The journeyman HC suffers none of the scruples which bind most officers. Being a gamesman, he easily and regularly perverts principles, standards, rules and regulations which, for obvious reasons, constrain the activity of most people. This contempt for the moral code which governs human interaction naturally earns for him a special place in the wardroom. He is the poorest of collaborators and cooperation is not in his vocabulary.

Friends may come and friends may go, but enemies accumulate.

He is not above blackmail, threat or intimidation of any who might stand in his way of such things as:

- Obtaining equipment on a spurious priority basis, thus denying it to those to whom it was officially allocated.
- Getting work details assigned in violation of approved work schedules.
- Requisition for priority or emergency allocation (or purchase) of materials.

Such violations (and many others similar) permit the HC to prosecute work on his project/program without the detailed planning and scheduling necessary for command-wide efficiency, while at the same time upsetting the properly programmed work of his contemporaries. The morale problems thus generated are easy to visualize.

Too often, the senior officer present is not informed of such a situation; most officers prefer silence to being cast in the role of informer. If the senior is of the type who often declaims, emphatically, that he is only interested in results, then he is at the same time declaring that he cares not by what *means* the results were obtained.

Friends may come and friends may go, but enemies accumulate; however, the HC was never interested in friends or friendship, nor in esprit de corps.

Someday, a medal will be struck for notorious HCs. It will be called the Zinovy because Rozhestvensky is so easy to mispronounce.

The year was 1904 and Nicholas, Czar of all the Russias, selected Zinovy Rozhestvensky to be his naval chief of staff and commander of the Baltic Fleet. Zinovy's ship had won the firing contest because Zinovy had had the foresight to mutilate his ship's target — in advance. Why leave the selection to chance?

So when the Czar ordered the Baltic Fleet to set forth to engage and punish the Japanese Navy in the North Pacific, 16,000 miles distant, Zinovy was *it*. His first act was to mistake the British Dogger Bank fishing fleet for the enemy and to sink it forthwith. Since this did not dispose the British to open the Suez Canal to them, Zinovy steamed with his considerable fleet — seven battleships, five cruisers, seven destroyers, and a dozen auxiliaries — around Africa, looking for the enemy all the way; across the Indian Ocean, past Singapore, up the east coast of Vietnam.

Seven months after leaving its base at Kronstadt, he found the enemy and charged — all ships properly in line — straight into the Tsushima Slot in the Sea of Japan where the enemy promptly sank every ship but three. Five thousand officers and men went down with their ships. The "battle" lasted 45 minutes.

Zinovy survived; captured, returned to Russia, retired; no doubt was called upon to give eye-glazing speeches on the subject of leadership, or whatever passed for leadership in Russia in those days.

But he was only one of the more notorious; Lord Cardigan of Balaklava "fame" was another. Both could claim diminished capacity. Both probably went to their graves insisting "it wasn't my fault."

The first Zinovy should be given to Marcus Aurelius Arnheiter, LCDR, USN, commanding officer (for 99 days) of the USS VANCE, 1966. His experience is documented in *The Arnheiter Affair*, Random House, 1971, by Neil Sheehan. It is worth reading. □

REDICHECK promises to minimize waste

Inadequate document review costs the Navy time and untold dollars

By LCDR WILLIAM T. NIGRO
R.A., Fla.
ROICC, NAVFAC, Trident

• Kings Bay, Ga.

How REDICHECK Came About

My first tour of duty in the Civil Engineer Corps was as an Assistant Resident Officer in Charge of Construction (AROICC) at Camp Pendleton, California. It was a great tour! I made lots of mistakes and spent most of my time dealing with change orders. For the first time in my life I was making decisions concerning large sums of money and enjoyed the responsibility that I was given.

My next tour was as Resident Officer in Charge of Construction (ROICC) at Yokosuka, Japan. It was a reasonable tour but I started to get tired of spending most of my time dealing with change orders.

My third ROICC tour was in Naples, Italy, where I became very frustrated with the time spent dealing with change orders. My frustration came from many of the change orders being repetitive in nature and due primarily to coordination errors in the plans and specifications. Also I hated to see such a waste of money on coordination errors that could have been avoided.

In 1975 I became an Assistant Public Works Officer at an air station. I realized after a short period of time that my Engineering Design Department was producing or contracting for contract documents with the same type of coordination errors I had despised as an AROICC/ROICC. I decided there had to be a way to reduce and/or eliminate most coordination errors.

During my three years at the Air Station I insisted that adequate time for a final 100% coordination review was dedicated in the design schedule. I found consistently that the 100% coordination review yielded significant savings far above the effort of the review. In particular numerous potential change orders and amendments were avoided with corresponding savings in reduced clarification drawings, correspondence with contractors, field changes, etc.

During 1979 while attached to a Reserve Command I found that most of my free time was on weekdays due to my work hours with the reserves on weekends and weekday evenings. During this time I decided that I would try consulting work during my spare time.

I felt that I had seen a lot of coordination errors in contract documents with my experience of administering over 210 construction contracts and negotiating upwards of 825 change orders. I knew I would be valuable to an Architect/Engineer (A/E) firm as a plan and specification contract document consultant.

After convincing an A/E firm in Kansas City to give me a try with a hospital addition project, I went on leave for a week and to their amazement compiled a 27-page list of coordination errors. They gave the list of errors to their estimating section and felt that the value of eliminated change orders was ten times the salary I had been paid.

At that point, and mind you I am on active duty, they set me up with my own office, key to the building and wanted me to work as many hours as I could checking their projects. During a two year period while on leave and during after hours work I provided coordination checks for twelve hospital projects.

Just prior to transferring to my next duty station I gave a training seminar to all 60 architects and engineers in the firm teaching them the methods and procedures that I had perfected.

Since 1979 I have worked as a consultant for several A/E firms providing coordination checks and training seminars on my system called REDICHECK. In addition I have been a guest lecturer at most Engineering Field Divisions (EFDs) and at the Navy Civil Engineer Corps School (CECOS).

What REDICHECK Can Do for You

In my NAVY contract experience, I have found that most change orders are due to coordination errors in construction drawings. I believe these errors are the result of inadequate 100% review of contract drawings since most architects and engineers do not dedicate sufficient time for a final review of their drawings nor often do they have the skills or tools necessary to conduct an adequate review.

Why do I say this? Because I have never found anyone who has ever attended a course on how to coordinate contract documents. As a result the only people who know how to coordinate documents tend to be very experienced personnel who have learned by the school of hard knocks.

Ironically, the experienced personnel are often thought to be too valuable to spend time coordinating documents. As a result it is often the least experienced person in an office who makes the final coordination review.

Also, it is quite common for designers to wait till the last minute to consolidate drawings from other disciplines and to have no coordination review whatsoever. REDICHECK helps solve this problem by providing review

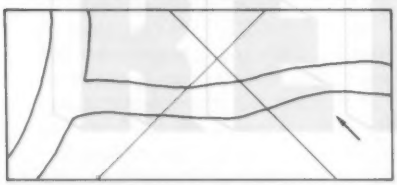
guidelines not only for professionals but also for persons with no prior contract experience.

Anyone, professional or nonprofessional, directly involved in the contract administration of design and construction will benefit from REDICHECK. For example, the REDICHECK checklist enables the ROICC construction representative to troubleshoot plans and specifications prior to construction while gaining needed familiarity with contract requirements.

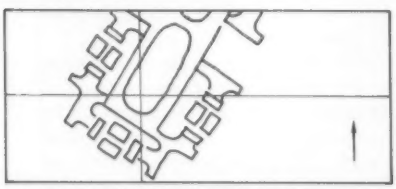
By applying REDICHECK methods, the ROICC anticipates problems and especially has time to solve them. The ROICC will then be more likely to avoid costly delays and time-consuming redesign, as well as enjoy smoother, less time-consuming contract administration. Just imagine the probability of fewer change orders in a ROICC office.

REDICHECK enables architects and engineers at the EFD level to give design submittals a review that allows the scrubbing-out of coordination errors and omissions. REDICHECK requires an interdisciplinary review of contract documents which exposes inconsistencies which characteristically cause pre-bid amendments, letters of clarification, extended bid opening dates and bids submitted with contingencies included to cover ambiguities in the plans and specifications. REDICHECK allows project design engineers an opportunity to produce high-quality plans and specifications and provides project managers with an efficient method for project familiarization.

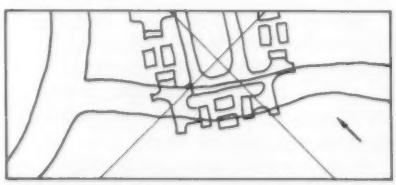
The REDICHECK method provides a logical and orderly approach to checking construction drawings and specifications, and, if used, could eliminate errors and up to three percent of the total construction costs.



Civil Engineer drawing indicating a drainage ditch.



Site plan indicating a housing complex in the same area.



When the drawings are superimposed with the same orientation, a problem is discovered. The drainage ditch is beneath a portion of the housing complex and must be relocated.

SEABEE projects can benefit, too, by applying REDICHECK to minimize "surprise" problems at remote locations. The REDICHECK method is compatible with PERT-CPM and other project scheduling methods. For a SEABEE project, problems encountered during construction may mean delay, extra material costs, compromised quality, and general inefficiencies.

Architect-engineer firms doing work for NAVFAC will benefit by using REDICHECK to maximize performance and minimize exposure to liability claims. REDICHECK facilitates coordinated review of A/E subcontractor work. Generally, the standards of the design industry allow an average 3% of construction cost for errors and omissions.

If the REDICHECK system were incorporated into A/E design projects, it would result in higher-than-normal standards. REDICHECK is a structured review-process which has been proven at the 100% stage to ferret out most of the problems in contract documents.

While conducting 100% design reviews, it is not unusual to find an average of five coordination errors or omissions per drawing. On an average 10 million-dollar project with 100 contract drawings, the errors amount to a staggering 500.

REDICHECK identifies inconsistencies by comparing all those things which interrelate between disciplines or appear more than once in different specialties. For example, the proper use of REDICHECK eliminates the following types of change order errors that frequently occur:

a. specification sections refering to other specification sections that do not exist.

b. specification sections that read: install something "as indicated," and then the contract drawings do not indicate the item anywhere.

c. column and beam locations on structural drawings at variance with architectural drawings.

d. architectural floor plans that call out openings for doors that do not match door widths in architectural door schedule.

e. light fixture locations on electrical drawings at variance with architectural floor plans.

f. mechanical drawings which read "see structural drawings for additional supports" and structural drawings which do not indicate the additional supports.

g. mechanical drawings which indicate items of equipment with different horsepower ratings and voltages then indicated on electrical drawings.

How to Perform a REDICHECK Review

Hopefully by now you are ready to give REDICHECK a try. Remove the staples from the plans and start thinking about sequence of construction. Follow the REDICHECK plan and specification review on page 13. Use yellow high lighters to mark items that are correct and red high lighters to mark those items that are incorrect or that you do not understand. Use of a light table will aid greatly when comparing plans between disciplines. If you don't have a light table use the nearest window and tape the drawings to the windows to compare overlays. Plan on spending an average of 30 minutes per contract drawing. Time consuming, yes, but well worth the effort.

Use of the REDICHECK review at the 100% design stage will aid the NAVFAC organization in avoiding delays in construction award, hidden costs, quality compromises, change orders, claims, and confrontations. REDICHECK permits in-house designers, A/E firms, SEABEEs, ROICCs and contractors to improve quality, enhance productivity and increase efficiency.

REDICHECK Review →

REDICHECK Plan and Specification Review

1. Preliminary Review

a) Quickly make an overview of all sheets spending no more than one minute/sheet to become familiar with the project.

2. Specification Check

a) Check specs for bid items. Are they coordinated with the drawings?
b) Check specs for phasing of cosntruction. Are the phases clear?
c) Compare architectural finish schedule to specification index. Ensure all finish materials are specified.
d) Check major items of equipment and verify they are coordinated with contract drawings. Pay particular attention to horsepower ratings and voltage requirements.
e) Verify that items specified "as indicated" or "where indicated" are in fact indicated on contract drawings.
f) Verify that cross referenced specification sections exist.
g) Try not to indicate thickness of materials or quantities of materials in specifications.

3. Plan Check Structural

a) Verify property line dimensions on site plan against architectural.
b) Verify building is located behind set back lines.
c) Verify column lines on structural and architectural.
d) Verify all column locations are same on structural and architectural.
e) Verify perimeter slab on structural matches architectural.
f) Verify all depressed or raised slabs are indicated.
g) Verify slab elevations.
h) Verify all foundation piers are identified.
i) Verify all foundation beams are identified.
j) Verify roof framing plan column lines and columns against foundation plan column lines and columns.
k) Verify perimeter roof line against architectural roof plan.
l) Verify all columns and beams are listed in column and beam schedules.
m) Verify length of all columns in column schedule.
n) Verify all sections are properly labeled.
o) Verify all expansion joint locations against architectural.
p) Verify dimensions.

4. Plan Check Architectural

a) Verify all concrete columns and walls against structural.
b) Verify on site plans that all existing and new work is clearly identified.
c) Verify building elevations against floor plans. Check in particular roof lines, window and door openings, and expansion joints.
d) Verify building sections against elevations and plans. Check roof lines, windows, and door locations.
e) Verify wall sections against architectural building sections and structural.
f) Verify masonry openings for windows and doors.
g) Verify expansion joints through building.
h) Verify partial floor plans against small scale floor plans.
i) Verify reflected ceiling plan against architectural floor plan to ensure no variance with rooms. Check ceiling materials against finish schedule, check light fixture layout against electrical, check ceiling diffusers/registers against mechanical, check all soffits and locations of vents.
j) Verify all room finish schedule information including room numbers, names of rooms, finishes and ceiling heights. Look for omissions, duplications, and inconsistencies.
k) Verify all door schedule information including sizes, types, labels, etc. Look for omissions, duplications, and inconsistencies.
l) Verify all rated walls.
m) Verify all cabinets will fit.
n) Verify dimensions.

5. Plan Check Mechanical and Plumbing

a) Verify all new electrical, gas, water, sewer, etc. lines connect to existing.
b) Verify all plumbing fixture locations against architectural. Verify all plumbing fixtures against fixture schedule and/or specs.
c) Verify storm drain system against architectural roof plan. Verify size of all pipes and that all drains are connected. Verify wall chases are provided on architectural to conceal vertical piping.
d) Verify sanitary drains system pipe sizes and all fixtures are connected.
e) Verify HVAC floor plans against architectural.
f) Verify sprinkler heads in all rooms.
g) Verify all sections are identical to architectural/structural.
h) Verify that adequate ceiling height exists at worst case duct intersection.
i) Verify all structural supports required for mechanical equipment are indicated on structural drawings.
j) Verify dampers are indicated at smoke and fire walls.
k) Verify diffusers against architectural reflected ceiling plan.
l) Verify all roof penetrations (ducts, fans, etc.) are indicated on roof plans.
m) Verify all ductwork is sized.
n) Verify all notes.
o) Verify all air conditioning units, heaters, and exhaust fans against architectural roof plans and mechanical schedules.
p) Verify all mechanical equipment will fit in spaces allocated.

6. Plan Check Electrical

a) Verify all plans are identical to architectural.
b) Verify all light fixtures against architectural reflected ceiling plan.
c) Verify all major pieces of equipment have electrical connections.
d) Verify location of all panel boards and that they are indicated on the electrical riser diagram.
e) Verify all notes.
f) Verify there is sufficient space for all electrical panels to fit.

7. Plan Check Kitchen/Dietary

a) Verify equipment layout against architectural plans.
b) Verify all equipment is connected to utility systems. □

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How to increase electrical power to ships and save money

By J. E. Lee
P.E., Ala.
Special Utilities Consultant
SOUTHDIV
• Charleston, S. C.

A major problem throughout the shore facilities serving the surface fleet is "inadequate shore power" or "not enough amps." This is true in many cases, for the following various reasons. There is not enough transformer capacity; not enough circuit breakers; not enough, or wrong length, shore power cables; not enough receptacles; and, at times, not enough power system supply to the waterfront to support all loads.

Many electrical load observations over the last 20 years for surface ships on shore power have indicated that the typical actual kilowatts (KW), or "real" power, and the reactive (KVAR), or "magnetizing" power, required by the ship are nearly the same magnitude. The total "indicated" power, or kilo-volt amperes (KVA), is the right angle sum of real and reactive power. (See Figure 1)

Real power does the work, but the reactive power is necessary to provide the magnetic fields of transformers and induction motors in order for them to do their jobs. A one-to-one ratio of real (KW) and reactive (KVAR) power yields a 70.7% power factor (Pf) but requires a current of 1.00/0.707, of 1.41 times that required to meet the real power component. The total amperes required dictates that cables, receptacles, switchgear and transformers be sized for the peak flow.

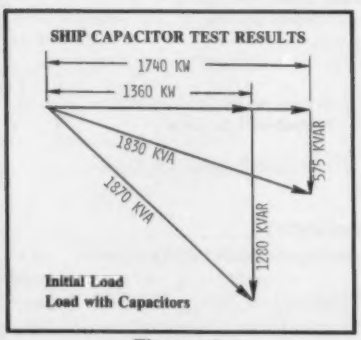


Figure 1.

There is a method of supplying magnetizing current at the load by the use of power capacitors rather than over the shore power distribution system. The capacitor current leads the applied voltage by 90° which can offset the magnetizing current which lags the voltage by 90°. Note on the sketch that magnetizing current is "down," or negative, and capacitive current is "up," or positive.

A trial use of power capacitors to correct poor power factor has been made on a submarine tender at the Naval Weapons Station, Charleston, S.C. Prior to the trial, the tender was limited to approximately 2600 amperes from the shore substation at 460-475 volts due to limited receptacle center and cable connections.

The starting loads of motors would trip shore power if the ship's electrical personnel had not very carefully managed the total load. Consequently, the ship had difficulty meeting its mission commitments on shore power. It was considered that the use of power capacitors would significantly correct this deficiency without the installation of additional receptacles and/or cable connections.

TRIAL RESULTS

A load check was made, using the shore substation KWH, current and volt meters. A typical load was as follows:

2350 amps 460 volts 1360 KW
The calculated Pf = 72.6%

Two 300-CKVAR, 480-volt, three-phase capacitor banks, connected to the ship's main bus through ship-alongside (SAS) receptacles that were infrequently used, were energized and the following readings obtained:

2000 amps 470 volts 1390 KW
Calculated Pf = 85.4%

Although the "real" load had increased over 2%, the current from shore had dropped 17-½%! As a young Engineering Division officer stated, "That's magic."

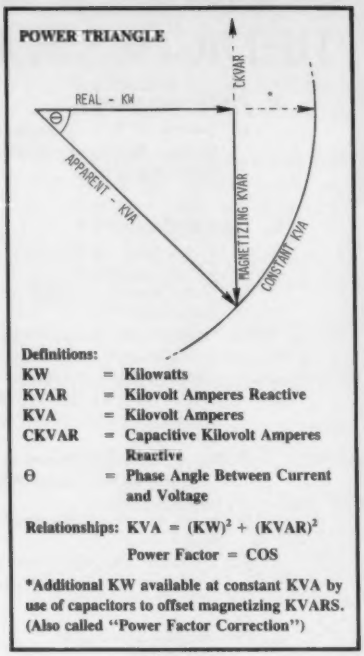

POWER TRIANGLE
CKVAR
REAL - KW
θ
APPARENT - KVA
MAGNETIZING KVAR
CONSTANT KVA
Definitions:
KW = Kilowatts
KVAR = Kilovolt Amperes Reactive
KVA = Kilovolt Amperes
CKVAR = Capacitive Kilovolt Amperes Reactive
θ = Phase Angle Between Current and Voltage
Relationships: KVA = (KW)² + (KVAR)²
Power Factor = COS
*Additional KW available at constant KVA by use of capacitors to offset magnetizing KVARS. (Also called "Power Factor Correction")

Figure 2.

Further tests were conducted using three and four 300-CKVAR capacitor banks. The following load was measured with three capacitor banks on:

2400 amps 460 volts 1780 KW
Calculated Pf = 93%

With slightly less shore power current flowing than the initial data above, the capacitors permitted an increase of real load from 1360 to 1740 KW, an increase of 28%. This difference is shown graphically in Figure 2. The increase in real power permits the ship to meet its operational requirements without tripping the shore power circuits. The capacitors also reduce voltage variations caused by load swings.

CONCLUSION

The total available increase in KW load to the specific ship made possible by the capacitor installation approximately equals the capacity that could be obtained by adding two additional 400 ampere shore power connections.

The cost of the capacitors was less than $20K while two additional circuits would cost approximately $40K. The capacitors have the added advantage that they can be relocated if the load is moved. To the taxpayers that might be "magic" if used on all large Navy surface ships. □

news worth reviewing

departments

Seabees Win Display Trophy at Fair

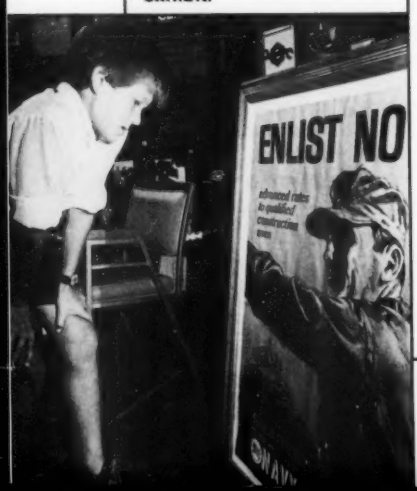
Gulf Coast Seabees put their best foot forward recently at both the Harrison County Fair and the Gulf Coast State Fair and Exposition. According to Navy journalist Ruth W. Jackson, the Navy exhibit was judged "Best Civic Exhibit" at the State Fair.

Passers-by were treated to video movies of Seabees in action and static displays highlighted their accomplishments around the world

The Naval Construction Training Center, a major tenant command at the Gulf Coast Seabee Center which trains about 8,000 Seabees a year, explained through pictures just what a Seabee is and the seven professional ratings which represent more than 100 Union identified jobs.

Manned throughout the fairs by Seabees, the exhibit afforded an opportunity for them to answer literally thousands of questions viewers had about "The Fighting Seabees." The Seabees, the Navy's construction force, are composed of about 5,000 active duty military people and a little more than 10,000 reserve replacements.

Master John Murley takes a close look at his possible future. He joined visitors at the Harrison County Fair, Edwater Mall to view the Seabee exhibit.



New Pier Designs at NCEL To Improve Shore Support

Many Navy piers constructed during and immediately after World War II, to support the Fleet, are becoming increasingly incapable of responding adequately to the needs of today's modern naval ships with their sophisticated electronics and advanced propulsion systems.

The average age of active ships is 15 years. Conversely, the average age of Navy port facilities is 35 years and increasing. The gap between the Fleet's more stringent requirements for shore support and the capabilities of aging port services to meet those needs continues to widen.

The Navy is committed to closing that gap. Gone are the days when piers were considered only as places "to park and go cold iron." The Navy knows that it must develop new pier designs which provide active working platforms to adequately support ship maintenance, operational checks and training, and refit functions.

Two types of proposals have been made: a function-formed pier and a double-deck floating pier. Both NCEL pier proposals incorporate the shore services that will meet the requirements of Navy ships through the 1990's. The Laboratory favors the floating pier concept because of the many advantages it has over any pile-supported concept. A summary of pier design concepts is expected to be published by the Lab early this year.

Seabee Dope Dog "Lightning" Seeks Out Drug Users

While the highway patrol uses radar guns to identify speeders, and breathalyzers to identify drunk drivers, Seabees use "Lightning" to seek out drug users, reports J03 Andy Williams from Gulfport, Miss.

Lightning, not to be mistaken for the bright, crackly results of an electrical storm, is a three-year-old Laboradorr-German Shepherd who has "shocked" the Center with incredible accuracy in identifying drug abusers with a simple sniff.

He's half of a team. His partner, UT1 William G. Biddle, says the shiny, black dog will search anywhere Biddle wants, "as long as it's safe."

"I check for hazards before I take Lightning in," said Biddle, "but, he'll search anything from cars to ships to airplanes."

The dog-man partnership has been together since September and they attended a special school to qualify for a drug search team.

"I picked him up at Lackland AFB (Texas), but he's originally from Wisconsin," said Biddle. He explained that unwanted dogs between the ages of one and three years old from all over the United States are examined and "interviewed" by Navy officials to see if they would qualify to become a search dog.

UTI Wm. G. Biddle and his trusty dog "Lightning."

If the canine is selected, the Navy buys it from its owner, then "recruits" the animal into either an ordnance, guard or drug dog program. That adds up to about $15,000 worth of training.

Biddle said there are two types of search dogs — passive and aggressive. "Lightning is a passive dog," said Biddle. He explained that if Lightning alerts to a drug order, he simply "strikes" by sitting. His ears go up, and he looks to his man-partner for a treat.

"I can tell when he lies to me and just wants to play, or when he's looking for a free handout," Biddle said, "because when he does alert to an odor there is a radical change in his behavior."

The dogs are used until they are about 14 years old and then are retired, frequently becoming the lifetime companion of their partner. Lightning, however, has only been working for about six months and Biddle says he "has a lot of life to go."

Army man needs challenge – joins Navy

Felix Burns trades Army green for Navy blue and more interesting assignments

By BEN DUFFY
Editor, Seabee Coverall

● Port Hueneme, Calif.

Looking for a challenge has always been a professional fact of life for Army Captain Felix Bob Burns. So much so in fact that he recently swapped his Army green for a commission in the Navy Civil Engineer Corps and the silver bars of a lieutenant.

According to Burns, the Army Corps of Engineers is so diverse compared to the Civil Engineer Corps, it's difficult to get assignments related to engineering. "Don't misunderstand me," said Burns, when asked about his ten years service with the Corps of Engineers. "I enjoyed my tours with the Army, but I felt it wasn't the right career direction for me. My interests and experience lay in engineering and management.

"During the last two years I was an advisor to reserve engineers," he said. "It was more an administrative than management position, and I found I was getting further and further away from both management and engineering."

Born in Malone, N.Y., a city not far from the Canadian border, Burns received his B.S. degree from Clarkson College, Potsdam, N.Y., before being commissioned a 2nd Lieutenant in October 1972. His first tour of duty was as platoon leader in Altlingen, Karlsruhe, Germany. For the next four years he served as an engineer platoon leader and company commander, as well as in a staff position as operations officer.

"Don't misunderstand me, I enjoyed my tours with the Army, but it wasn't the right career direction."

"When I returned from Germany," he said, "I was at a definite disadvantage in career progression. I didn't have a degree in engineering—only a B.S. in political science. Originally, I intended to become an attorney. But, through engineering, I found a career field I am comfortable with and enjoy a great deal."

LT Burns became convinced that the CEC offered the professional challenge he was seeking after talking to CDR Larry Meyers, Executive Officer at CBC, Gulfport, who provided him support and information.

Although Burns had attended the Army's eight-month-long Engineer Officer Advanced Course at Fort Belvoir, Va., it wasn't until he attended the University of Maryland in 1977 through the Army's postgraduate education program that his professional career began to progress into an area where his deeper interests lay.

With an M.S. degree in civil engineering, Burns was assigned to the Huntington District (W.Va.) Corps of Engineers as a quality control inspector in a civil engineering project for flood control, as well as a civil works project in Paintsville, Ky.

"Public works holds great interest for me," Burns said. "The Civil works projects I was involved with in the Corps were what I wanted to do professionally."

It was while assigned to a flood control project and dredging operation in Gulfport, Miss., that Burns first became aware of the unique job assignments of the Navy's Civil Engineer Corps.

"When I was in Gulfport I ran into a lot of CEC officers and knew a few socially. Their assignments and direct involvement in the many facets of management and engineering, I thought, were just the type of professional challenge I'd been looking for. Through the contacts I had made with CEC officers I researched the Civil Engineer Corps thoroughly." It was only a short time later before he knew exactly what he wanted to do.

"Commander Larry D. Meyers, executive officer of the Construction Battalion Center, Gulfport, provided a lot of support and information. I told him what I liked and what I was looking for in terms of a professional challenge—facilities engineering — to broaden my background and experience. CDR Meyers made a few suggestions, and offered advice, and the more I listened the more convinced I became that the Civil Engineer Corps was for me," added Burns.

The Navy is concerned with constructing facilities that are the best, while the Army's mission calls for less permanent ones because of the different nature of its mission.

It wasn't long thereafter that Capt. Felix R. Burns, USA, laterally transferred into the Navy and reported to the Naval School, Civil Engineer Corps Officers, Port Hueneme, Calif.

While a student there, Burns was introduced to the Navy way of facilities engineering. "Almost immediately I began to see the differences in the way the Army and Navy approached their projects. The Navy is concerned with constructing support facilities that are the best that can be provided, but they're also concerned that these facilities should last thirty or forty years or more with the minimum of preventive maintenance. The Corps of Engineers is not as concerned with permanent support facilities because the nature of their mission is different than that of the Navy."

Since graduation from the Civil Engineer Corps Officers School LT Burns has reported to the Naval Air Engineering Center, Lakehurst, N.J., as Assistant Public Works Officer. He resides there with his wife Linda. □

reader's comments/questions

departments

Another editor comments

Outstanding improvement in your cover, looking more like a copy of a current newsstand magazine than an internal publication.

I particularly enjoyed reading the reader's comment about "better late than never." I too have "a tradition" much to my chagrin. If you have any tricks on how to improve this trait let me know.

Kathleen M. Blokzeyl Roth
Editor, The York Communicator
York, Pa.

I'm happy to see that our magazine is not the only one that is traditionally late. It's a tradition that I am desperately trying shake and I know of only one solution: shave a few weeks off the next few issues until we are caught up. It ain't easy, but I hope it works!

Thanks, Kathleen, for noticing our new logo and cover design. You said exactly what we wanted to hear!

Former Seabee discovers magazine while delivering mail

I am a letter carrier in the State of Pennsylvania. While serving a route last week I came across the Fall issue of your magazine, Navy Civil Engineer. This caught my eye (your logo) because I served with the Seabees in 1969-1971, and of course I know all of our officers were CEC trained. Well I never knew such a publication existed.

I asked the patron who was to receive the magazine if I could read it when he was finished with it. So I was able to read over your informative magazine. (I have my subscription fee on its way.) I've always been interested in keeping abreast of CEC and Seabee operations.

I served with NMCB 121 (Aug. 1970) (now decommissioned) in Viet Nam 69-70. Upon returning to CONUS (Gulfport, Miss., 1970) I received orders to NMCB 62 which is another reason I am writing. On page one of your Fall issue I noticed in the lower left corner you have stated the Cdr. and Chief of CEC and the V. Cdr. The latter is who I have a question about. (Rear Admiral John Paul Jones, Jr.)

When I was placed into NMCB 62 our battalion commander was a Cdr. John Paul Jones. Can you tell me, is this possibly the same person? I was only in the battalion a short while — maybe two months. Then I separated; my active duty was over. I do remember NMCB 62, at that time, was the top battalion in CBLANT. We had the "E". I never met this Cdr. J. P. Jones, though.

Thanks for having such an interesting magazine.

Thanks for your time.

J. E. Steele
Glenmoore, Pa. 19343

Thanks to you J. E. Steele, for taking YOUR time to write. We do appreciate your interest and enjoy hearing unusual stories such as yours. Thank you also for the compliments. Feedback such as yours can only inspire us to try harder in the future to keep you informed.

Yes, that WAS your old bosses' name in the masthead of the magazine. A conversation with RADM John Paul Jones, Jr.'s secretary, Tina, verified that RADM Jones WAS the former commanding officer of NMCB-62 while you were in that assignment. He was CDR Jones then.

To Gerald K. Olsen:

By now, you have probably received some photos from RADM Howard H. Haynes, COMCBPAC, Pearl Harbor. RADM Haynes read your letter-to-the-editor in the Fall Issue of the Navy Civil Engineer, in which you asked for information about Diego Garcia and he responded to your request. His staff telephoned the magazine office to get your address so that he may forward the photos to you. Very nice of the admiral to do that we thought!

The editor

How about an assignment in Omaha, Nebraska?

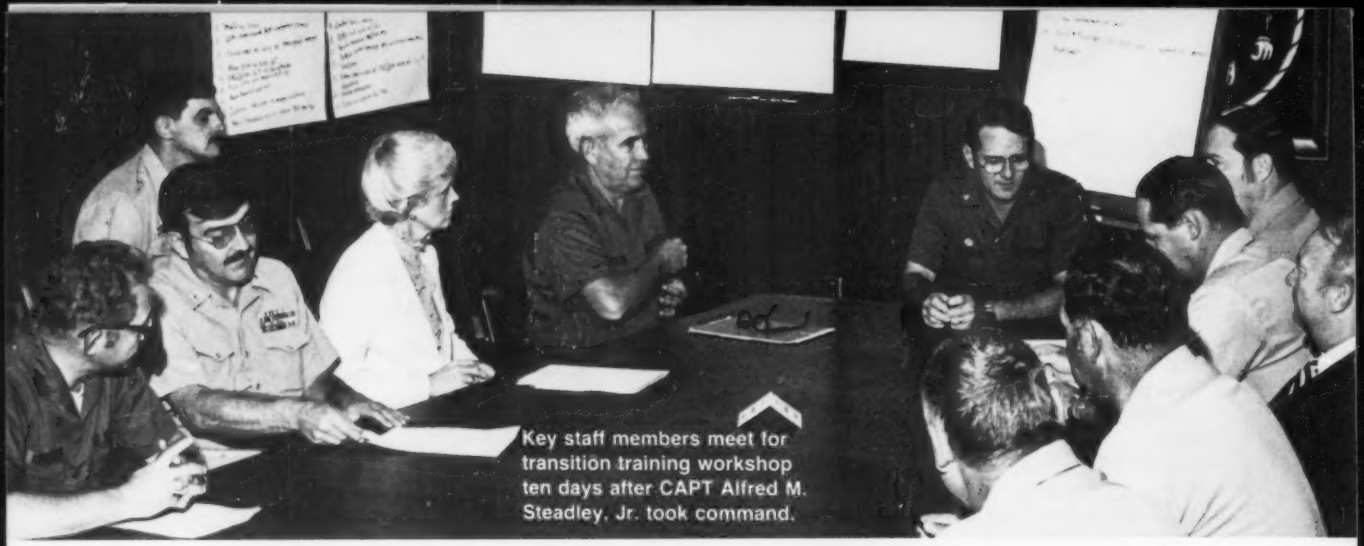
That's what my detailer asked me one day and I thought he was kidding. The Navy couldn't possibly have anything in Omaha! He wasn't kidding. The Navy DOES have two billets in Omaha. One is an exchange billet with the Air Force and the other is a vulnerability engineer on the Joint Strategic Target Planning Staff (JSTPS) which is colocated with the Strategic Air Command Headquarters.

It must sound self-gratifying for an officer without at least "20 in" to write a story concerned with his most extraordinary job, especially when I must sadly relate that, for national security reasons, I can't write about the very events that made the job extraordinary. So why tell the story at all? Because like CDR Steve Beuby's article in the summer edition of the *Navy Civil Engineer*, "Not all CEC jobs are in Podunk Hollow", I think it's important for the word to get out about the unique and important jobs in the CEC that aren't necessarily Seabee, Public Works or Contracts related.

With all that introduction done, I am hereby submitting a story of JSTPS and the role the CEC plays in our nations's nuclear war planning. I hope you like it.

LCDR S. R. Thompson, PE
NAVFAC
Alexandria, Va.

I do like it very much and will try to publish it in the next issue of the magazine. We're impressed that you noticed CDR Steve Beuby's article in the Summer issue 1982, and that "Not all CEC jobs are in Podunk Hollow." I hope more potential writers will take note and react. Thank you for your letter and article.



Key staff members meet for transition training workshop ten days after CAPT Alfred M. Steadley, Jr. took command.

'The Command Transition Workshop'

A boon for new commanding officers who don't want to take six months in the command change transition

By CDR Larry D. Myers, CEC, USN
P.E., Mass. and Miss.
Executive Officer, CBC

• Gulfport, Miss.

A select few individuals are chosen to lead organizations. In the U.S. Navy they are called commanding officers and the organizations they lead are stations or squadrons or ships. Within the Civil Engineer Corps, the organizations bear labels such as PWC, EFD, CBC, NMCB, ACB, NCTC, and NCEL.

No organization is the same today as is was just a few years ago. At times, changes are implemented within an organization without any noticeable difference, yet at other times difficulties develop that can linger with the new commanding officer during his entire tour. The EFD of today is vastly different from the EFD of five years ago. Part of the reason is advancing technology and changes in governmental policies. Yet the element that pulls it all together and makes it perform at its very best is the leadership at the top. The single most important factor is the commanding officer. How he or she handles the situation and the organizational groups will determine the degree of success and productivity of the organization. He is the catalyst for change.

Captain A. M. Steadley, Jr. tells his staff, "I'm familiar with transition training. I've seen it work and the benefits are tremendous."

The traditional indoctrination approach for the new commanding officer is to schedule a series of briefings, tours and meetings. The new commanding officer is presented the history, facts, and data on each major segment of the command. The presentations tend to be statistical in nature. Lots of numbers, historic trends over the years and projections of where we are headed are presented. Colorful slides are shown in an air-conditioned briefing room, with coffee and donuts. The tour is either a windshield drive or a walk through the better spaces.

Obviously, each commanding officer would like to begin his tour with the best possible understanding of the command's goal, priorities, and management practices. He would like to reduce the amount of personal and organizational disruption that is often inherent in a change of leadership and management styles. There is an excellent leadership technique available to the prospective commanding officers to accomplish this purpose — "The Command Transition Workshop."

The change of command transition model was originally developed at a civilian corporation by an internal occupational education consultant. Corporation researchers found that it normally took a new manager about six months to become fully productive. The corporation decided they could not afford the luxury of allowing new managers that much time to get settled in their positions. The model was specifically designed to reduce the amount of organization "down-time" spent in the managerial succession process. The theory was first used in a military application by the Army in 1976, and adopted by the Navy late in 1979.

The objectives of the one-day workshop are to clarify concerns about the change of command and the participants' expectations of the new commanding officer, to identify the major priorities of the command for the next six to nine months and to provide the participants the opportunity to observe and re-examine the command's internal management procedures.

The workshop should be planned in advance by the prospective commanding officer with the staff of the nearest

Human Resource Management Detachment or center. The workshop should be conducted within two weeks following the change of command. It should be held on "neutral" ground such as a conference room away from work offices. Not in the commanding officer's office. No interruptions or phone calls should be permitted.

A non-threatening environment must be created where participants feel free to speak openly and frankly. A lunch for the participants should be planned.

Members of the Human Resource Management Detachment, Mayport, Fla., assisted in a recent command transition workshop at the Naval Construction Battalion Center (CBC), Gulfport, Miss. Captain Alfred M. Steadley, Jr. met with the key staff members of CBC and the 20th Naval Construction Regiment (20NCR) ten days after his assumption of command. The workshop took a day, half of which involved him, as the new commanding officer. Capt. Steadley was familiar with transition training, had seen it work at his previous command, and realized the potential it offered.

The manner in which the session was conducted followed this general pattern: The commanding officer opened the session with a greeting, a bit of personal history, some general philosophies, and he then summarized his understanding of the purpose of the workshop. The facilitator then covered the remaining details and stressed the importance of free and open discussion.

The rules permitted a great deal of flexibility in the sense that any subject could be brought up but there were certain ground rules: avoid major discussions on minor items and discussion without adequate definition. It was desired to have maximum participation; e.g., one individual should not dominate discussions. And, finally, no personal attacks, or adversary relationships.

The group now having its guidance, the commanding officer left, the facilitator stepped back, and the discussions started. Butcher paper was used to summarize the thoughts in one liners. Ten sheets were filled! The topics ran all the way from support of the NAVFAC Command Management Plan to "Do you care if anybody else uses a green felt tip pen?" or, "How do you prefer we address your wife?" and, "What are your thoughts on a timely workflow process to avoid crisis management?" The chain of command, management, and communications headed the list of 110 subjects discussed.

Just prior to a luncheon for the participants, the commanding officer returned and was given an item-by-item rundown by the executive officer of CBC and the Chief Staff Officer of 20NCR. No discussions took place at that time, other than elaborations felt necessary by the XO and CSO.

Following lunch, the commanding officer addressed each one of the items and gave his views on them. In a number of instances, it was recognized that further study was needed, or in some cases the commanding officer just didn't have a ready answer. These topics were recorded for action. For the most part, though, ideas were reinforced, goals were established, and a mutual understanding took place.

As the meeting progressed, many were astonished to find that the command was aligned much closer than previously thought. There was a common trust, and in fact, departmental goals of most departments were supportive of others.

Secondly, in responding to the various subjects, the commanding officer was able to add in his own personal philosophies and management styles. Thus it allowed a very broad range of subjects to be individually addressed at an early date. The formal CBC and 20NCR departmental briefings that followed took almost six weeks to accomplish, and valuable time would have otherwise been lost in getting these thoughts to key managers.

The third benefit, and somewhat related to the second, was that it gave the commanding officer a good feel for the strengths and weaknesses in his command; here again, early on. The goals that were developed in the meeting were the result of a joint effort. They were initiated several weeks sooner than they would have been had the meeting not occurred.

Three months later a review workshop was held at the Seabee Center to take the pulse of the command. Did the transition workshop accomplish its purposes? Was it a good idea? Are we heading the way we said we should? Do we still think we should be heading that way? Any new ideas? And more. It was the consensus that transition training is a tremendous tool to work with and it has been very beneficial. The workshops provide a proven process to build teamwork and enhance productivity. □

ICC (SW) Peter M. Breslin, Human Resource Management Office, Gulfport, assisted in recent command transition workshop held at CBC, Gulfport.

speaking from topside

departments

Roughly one year ago, I was given one of the most challenging assignments for individual performance of my career. The Chief of Naval Operations was concerned about the smartness and appearance of the shore establishment in direct relation to his concepts of pride and professionalism. He was concerned for the effects of observed confusion and poor appearance of the shore establishment on military members and the general public. He was convinced there is a significant effect on recruiting, performance and retention of military personnel and support of the general public for the Navy.

I was tasked to visit 87 major commands in the CONUS during the months of February and March to establish a visual impression through "one set of eyes," collect data and ideas from the commanders and commanding officers visited, and make recommendations of practical actions that could be taken to improve current conditions.

A few of my observations and recommendations from this effort:

- Our first class Navy is aboard ship and on the flight line and seen by only a small segment of the public. The bases are seen by and impress one way or another *all* Navy members and give the primary visual impressions to the public of how well the Navy is managing their funds. The general overview of the installations I visited is the Navy is not doing well base appearance-wise compared to the other military services, local governments, and many of the large private corporations.
- Navy bases should provide pleasant physical environments conducive to recruiting and retaining skilled and motivated personnel. The appearance of the base can be either clear, logical, and attractive or cluttered, confused, and disoriented. Too many of our bases convey the latter. Main gates, buildings, roads, parking lots, signing, and landscaping must be functional, attractive, and harmonious with its surroundings.
- Practically all base commanders and commanding officers share my concern and are working hard to develop strategies to improve base appearance.

"I look forward to steady improvement in the shore establishment over the coming years"

However, there is a general lack of expertise available to the commanding officer at his level to do these things efficiently and in a coordinated and effective way. There is also wide disparity in financial support and attitude of financial managers for this purpose. Generally, the average commanding officer of an installation feels he has to place himself at risk if he is to set aside some resources to apply to this kind of investment because of his backlog of essential maintenance and operationally oriented funding requirements. It would help to develop a Navy attitude that funding and maximum use of self-help to improve base appearance is respectable and important.

- I see no way to assure productive use of any funds applied to this purpose without strong participation of design professionals committed to a comprehensive planning process. Once the plan is formulated, a program can be developed which lays out the many elements and projects. An orderly attack can then be made on the problems as prioritized by the activity commanding officer and his line chain of command.
- We can do very good things with plantings and signs to improve the gates and the interfaces with the community at the bases and in sub areas of those bases which affect the highest number of people, military and civilian.
- A discipline has to be incorporated into the color-coordination of our buildings and structures as they are painted in normal maintenance schedule.
- More thought needs to be given to circulation on the base, imaginative parking schemes, attractive sign standardization and sign reduction.
- Site furnishings, such as dumpsters and bus stops and trash barrels need to be addressed and systematically improved.

- Another major aspect of Navy appearance ashore is the visual impression of our rolling stock. Our vehicles advertise, "*U.S. Navy.*" If they are unattractive and we can't bring them to a high standard we should at least remove the advertisement.

One excellent approach to execution is to develop open-end contracts for landscaping, signs, painting, striping, etc., which are compatible with the overall professional plan for these types of improvements. These would be available to the commanding officer for judicious use of year-end funds to be applied to base appearance.

RECOMMENDATIONS

Develop A Professionally Crafted and Comprehensive Plan

- Should be comprehensive and disciplined for all commands at a single base
- Break down areas of the base which visually impact the largest number of sailors/public in priority order
- Program and budget by each commanding officer over five years

Dedicate Funds — Make Spending For Appearance Respectable

Develop a Space Utilization and Demolition Plan

• Space utilization studies are needed at many bases to develop *firm demolition* plans which then require funding and command priority for demolition ASAP by contract or military labor. The studies should concentrate on the highest-cost-of-ownership buildings which can be vacated and demolished.

Sensitize Chain of Command

Improve Appearance of U.S. Navy Rolling Stock Which Advertise "U.S. Navy"

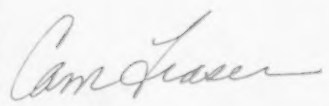
As a one-time kick-off to implement the improvement program, CNO reallocated significant funds to support these recommendations and others which are not quoted here. The most highly leveraged investment is that which will produce comprehensive base exterior architecture plans for all of the major Navy commands in CONUS and Hawaii. It is expected that this planning effort will be completed by this summer and it will be up to each commanding officer to keep the initiative alive and progress towards creating a smartness of his base that should be expected of a first class Navy.

One thing that clearly impressed me at several locations was an apathy about discipline of the space at existing facilities. While it is an onerous chore to make space reductions, it is a clear necessity in terms of the requirements for maintenance and repair moneys and expenses of utilities to support excess space.

Each commanding officer has been charged by the CNO to confine his activity within the space criteria justified by his mission. It is up to his technical advisors in facilities to advise him when he is spending scarce resources on space in excess of the criteria (need) and where rational decisions can and should be made, to close up facilities and in some cases, demolish facilities where there is no longer a "real" current need or a future need (which would argue for mothballing).

Civil Engineer Corps officers and senior civilians in the facilities business need to be mindful of the strong desire of the CNO to make steady progress in the shore establishment along these lines. In my view, we must be the reminders, the catalyst, the planners and advisors to insure that this major initiative of Admiral Hayward, and strongly supported by the current CNO, Admiral Watkins, does not die from lack of support. Armed with the centrally financed plans and the clear philosophy of the CNO, we should aim to make our contribution to sustaining and nurturing this very meaningful CNO direction.

I hope this message is clear that we all have a responsibility for making best use of what we have and making sure that what we have presents an attractive and first-class impression on the members of our organization and those that support us. I know we can make tremendous improvements within our own resources and I look forward to steady improvement in the shore establishment over the coming years.



John C. Fraser, Jr.
Commodore, CEC, USN

Captain A.W. Fort is new Commodore

By Sue Ladd
Public Affairs Office - NAVFAC

The selection of Captain Arthur W. Fort, CEC, USN, for promotion to the grade of Commodore in the Civil Engineer Corps of the United States Navy was announced by Secretary of the Navy, John Lehman, on February 2 and sent to the U. S. Senate for confirmation. Commodore-select Fort is presently serving as Commander of the Naval Construction Battalions, U. S. Atlantic Fleet, Norfolk, Va.

Commodore-select Fort will become the Navy Civil Engineer Corps' second Commodore since the Defense Officer Personnel Manpower Act (DOPMA) was enacted in 1981. DOPMA restored the commodore rank to the naval service for the first time since World War II.

A native of South Carolina, Commodore-select Fort graduated from Auburn University in 1958 with a Bachelor of Science Degree in Civil Engineering. His subsequent education included attendance at Stanford University, the University of Pittsburgh and the Armed Forces Staff College. He is a registered Professional Engineer in the State of Mississippi.

Commodore-select Fort has served in a variety of assignments during his career, including duty with the Seabees in NMCB-10 during the Vietnam Conflict and as Commanding Officer, NMCB-74, with deployments to WESTPAC and Diego Garcia. Under his command, NMCB-74 was chosen Best-of-Type, Atlantic Seabees, and won the coveted Peltier Award.

His awards include two Bronze Star Medals; two Meritorious Service Medals; the Navy Commendation Medal; and the Army Commendation Medal. Commodore-select Fort is married to the former Noel Egge of Gulfport, MS, and they have four children – Lisa, Michelle, Suzanne and Stephen.

Selecting and sizing anchors

Interested since 1947, NCEL is doing something about taking away the guesswork

A standard drag anchor is deployed for testing in sand at San Diego. Clearly visible is an instrumentation package. The anchor was one of about 200 used by NCEL during at-sea tests.

By Jerry Thomas
Writer-Editor, NCEL

• Port Hueneme, Calif.

The Navy is developing an engineering data base to take the guesswork out of the selection and sizing of anchors.

The Naval Civil Engineering Laboratory (NCEL), Port Hueneme, Calif. (under the sponsorship of NAVFAC), has completed a comprehensive four-year program involving more than 200 at-sea tests of a wide variety of Navy and commercial anchors, ranging in size from 1,000 to 20,000 pounds, in various seafloors common to worldwide Navy fleet moorings.

As a result of tests conducted by NCEL's Foundation Engineering Division, Ocean Engineering Department, the state-of-the-art in anchoring has been improved in three areas. First, the Navy now has a better understanding of what causes erratic anchor behavior, and now knows what should be avoided in specifying anchors and installation procedures for specific applications. Second, this new understanding allows Navy engineers to improve anchor behavior by modifying anchor configuration. An third, the data base resulting from the tests forms the basis upon which anchor-holding capacity prediction schemes can be developed.

NCEL's interest in anchor behavior dates back to 1947 when tests were performed to determine the effectiveness of available mooring anchors and their suitability for Navy fleet moorings. The unsatisfactory behavior of these anchors led the Laboratory to the development of the STATO family of mooring anchors which proved to be the forerunners of a new breed of high efficiency anchors.

Renewed interest in the performance of Navy and commercial anchors was sparked when the Navy faced the possibility of spending millions of dollars for new high efficiency anchors to satisfy future fleet mooring requirements. The concern was that the selection of anchors to satisfy those requirements was more of an art than a science because of a limited data base for available anchors.

There also was a fear that a large portion of the cost of new anchors would be spent on overdesigned moorings, or that perhaps they would prove inadequate, resulting in unsafe moorings.

With 384 permanent Navy fleet moorings installed worldwide and scheduled for upgrading, it was imperative that NCEL develop a data base that would enable engineers to select the correct anchor for use at a given site; an anchor which would satisfy the Navy's newly upgraded requirements calling for stronger and more reliable moorings.

The approach taken by the Laboratory has been to test full-sized anchors in environments typical of fleet moorings. The anchors tested were instrumented. Their response in terms of force at the anchor, drag distance, pitch and roll of the anchor, and depth of embedment into the seafloor could be measured during each installation. With this technique, it was possible to "observe" in detail the anchor's behavior as it penetrated the seafloor.

This data provided insight that permitted engineers to make simple and quick alterations to anchors. These alterations improved anchor performance, helped establish anchor holding efficiency (the ratio of anchor holding capacity to anchor weight) and isolated the holding effects of the anchor from those of the anchor chain.

To minimize costs, the Laboratory sought and received the cooperation of other government agencies and commercial anchor manufacturers. NAVFAC and the Naval Sea Systems Command (NAVSEA) provided funding and equipment support. The Washington State Army National Guard provided substantial work vessel support during tests in Puget Sound.

Three major companies — Vrijhof Ankers, Bruce Anchors and Baldt Anchor and Chain — provided anchors for testing. The firms were given access to NCEL test results. In some instances, the data and Laboratory recommendations were used to modify anchor configuration, resulting in improved performance.

Of immediate importance to the Navy is the fact that the information developed thus far allows the Navy to effectively use anchors already in its inventory. In fact, the new data has saved the Navy approximately $500,000 in the rehabilitation of the mooring system at Apra Harbor, Guam. Anchor tests there determined that Navy anchors in stock could be used effectively. They are and the system is meeting requirements.

A recognized leader in anchor technology, the Laboratory in the late 1940s compiled data for the design of a new and improved class of anchor. As a result, NCEL's STATO anchors (weighing 200-15,000 lbs) are in use today throughout the Navy. Earlier years of research and development at the Lab also resulted in improvements in the Navy's Stockless anchors.

In the mid 1960s, when requirements called for a reliable salvage anchor for installation in coral, and for a deep-water (to 20,000 feet) anchor for antisubmarine warfare application, NCEL initiated development of a series of propellant embedded anchors.

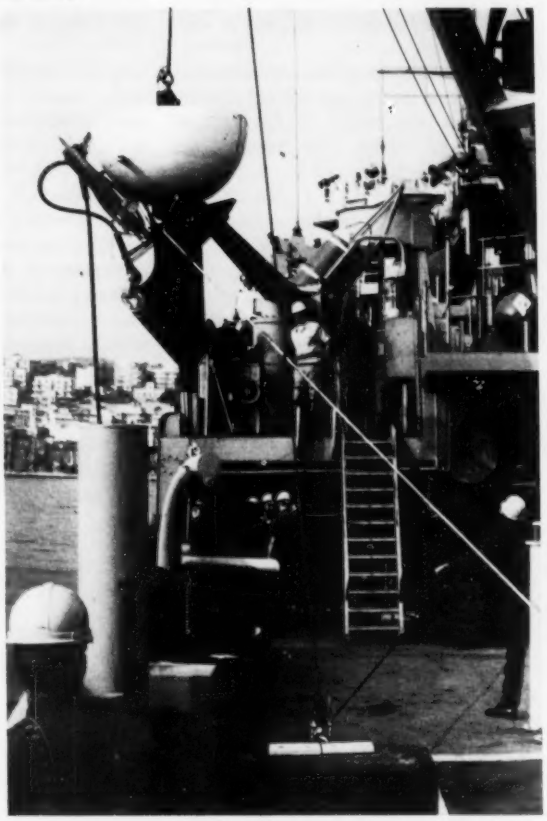
They proved invaluable at sites where weight, cost and precision placement were critical, and where seafloor conditions such as thin sediment or coral prohibit deployment of drag embedded anchors. Since 1970, approximately 170 propellant embedded anchors have been installed worldwide, serving a broad range of Navy anchor and mooring applications and requirements.

The propellant embedded anchor system and associate technology gives the Navy a series of anchors with nominal holding capacities of 10 kips (kip is a unit of weight equal to 1,000 pounds), 20 kips and 100 kips. The anchors can be installed in virtually any water depth and in mud, sand or coral seafloors. The Laboratory is developing anchor flukes suitable for rock seafloors and a 300 kip propellant embedded anchor to support fuel supply systems during amphibious operations.

The Navy installation at Diego Garcia in the Indian Ocean is a prime example of the successful application of propellant embedded anchor technology. On three occasions the anchors were installed in the island's harsh coralline environment to meet fleet needs.

The first 18 anchors were for tanker moorings. The next 10 were for mooring buoys at the end of a fuel pier. Then 88 anchors were installed to moor ships of the Rapid Deployment Force stationed there.

NCEL's 35 years of research, development, testing, and evaluation of anchors continue to play a vital role in improving the Navy and commercial sector's capabilities to understand, design and install more demanding and complex moorings. □



Four years ago this 100K Navy propellant embedded anchor was installed at Gaeta, Italy, to provide bow mooring for the USS Albany, then the flagship of the Navy in the Mediterranean. The mooring is still in service.

Naval hospital gets seismic design

Built in 1968, the Oakland Hospital will get structural improvements

By J.V. Tyrrell
P.E., Penn., N.J., Del., Md.
Civil/Structural Division, NAVFACHQ

• Alexandria, Va.

The Oakland Naval Hospital

The Oakland Naval Hospital was built in 1968. The design, started in 1965, conformed to the design criteria applicable at the time. In the intervening period, a lot of work has been done in the field of seismology and earthquake strengthening. This has resulted in substantial changes in seismic design.

It is not surprising that some structures constructed in the past are not entirely adequate structurally in the light of present knowledge. Unfortunately, the Oakland Naval Hospital is one of these structures. Fortunately, NAVFAC's investigations of seismic safety have brought this to light and a project has been initiated to strengthen the structure. At the same time some upgradng to meet current standards for medical facilities and general operational safety will be accomplished.

The basic need for structural improvement arises from two considerations. First, the present estimate of the appropriate design earthquake for this location is much greater than when the original design was developed. Secondly, more is now known about connection requirements for shear transfer and the factors affecting ductility.

The building is located in a valley with a small fault on the northeast boundary of the property and is less than 1000 feet from the major Hayward Fault. An earthquake of Richter magnitude 7.5 appears possible on the Hayward Fault. This is about the same size as the quake which caused major damage in Bucharest, Hungary, and was felt over a wide area in Europe in March 1977. The 1971 San Fernando quake which caused a considerable amount of damage in the Los Angeles area was recorded as approximate magnitude 6.7.

Prospective view – proposed structural solution

The hospital is a nine-story structure with four towers rising above a large irregular area of four stories in height. The towers on opposite sides of the core area are slightly offset, creating torsional effects. The exterior walls of the existing hospital are precast concrete and have only a minimal connection to the floor slabs. This system is not effective as a shear wall and, of course, the interior columns were not designed to resist the present estimate of lateral loadings.

NAVFAC has made an engineering investigation study of the hospital to establish the extent of vulnerability. The basic study by BLUME/URS was extended to determine the best method of strengthening. Additional shear walls was one possible structural solution.

Existing walls could be reinforced or new walls constructed in a convenient location. However, new structural members would disrupt the present functional uses.

Also interior modifications would require closing large areas during construction.

The Western Division, NAVFAC-ENGCOM has recently awarded the contract for final design to H. G. Degenkolb, Associates. If the concept is followed, as presently anticipated, the completed structure will be similar to the artist's drawing (right). □

Introducing

The Optimum Legibility Formula

By BUDDY ROBERT SILVERMAN, Ph.D.
Director, Documentation Division
Naval Facilities Engineering Command

Now, engineers can turn cloudy, complex writing into "accurate, clear and brief messages" simply by following this formula. Read on!

• Alexandria, Va.

Acquiring the skill to understand complex information reduces an engineer's ability to write simply. Under the same invalid line of reason, developing the skill to run would retard a child's ability to walk; and graduate engineering management education would erase fundamental engineering knowledge.

Only an extreme cynic accepts the reckless notion of an advanced skill diminishing a basic ability. However, both industry and government perpetuate that rationalization into a self-fulfilling prophesy by obligating enormous sums of money for laymen to rewrite future manuscripts of engineers.

Traditional self-simplification approaches reinforce engineer dependence upon editorial support by forcing intricate engineering language into an unnatural conversational style. My Optimum Legibility Formula provides the engineer with an unconventional but reliable method for achieving precision in written passages.

The Optimum Legibility Formula proposes an editing method of consolidating content in order of priority and restricting the use of verbs to one per sentence, written in the active voice adjacent to its subject, in seven easy steps:

1. Determine whether the writing produces a specific decision, recommendation, correction, request, or authorization. If not, kill it.

2. Provide indisputable answers to the six traditional reporting questions — Who? What? When? Where? Why? How? Then combine the six answers into a new lead sentence.

3. Consolidate all sentences with identical or synonymous verbs.

4. Reorder sentences by priority, leaving all generic and redundant sentences in a paragraph at the end. Then kill that paragraph.

5. Place verbs immediately following their subjects without any interrupting modifiers.

6. Eliminate all linking verbs — appear, become, feel, grow, seem, and any tense of the verb to be (am, are, is, was, were, be, being, and been).

7. Use one verb per sentence. Convert additional verbs into gerunds or infinitives by adding "ing" at the end of a verb or "to" before the verb.

The Optimum Legibility Formula works best not as a writing tool, but as a rewriting or editing method. Now apply it to this hypothetical 164-word message:

Contingency plans that will anticipate uncontrollable changes in the Project X environment are needed because there could be unusual situations that change construction requirements, which are the basis of the approved level of program funding during this fiscal year's budget period. If environmental changes are compensating, it will be possible to delete or delay operations on all or part of one major project and permit starting of the unexpected project. If the environmental changes are to decrease construction requirements, it would be necessary to move up dates of project milestones providing that is advisable under the situation. But if environmental changes increase construction requirements, contingency funding that is based upon a demonstrated need to substantially increase the level of capability to meet accelerated or unplanned but undeferrable construction requirements would need to be released. It is therefore recommended that programming for next fiscal year's contingency operations make provisions for a contingency fund that is in a minimum amount of 30 percent of the appropriation. (164 words)

Continued on next page

The 164-word message reduces to 25 words:

I recommend establishment of a Project X contingency fund next fiscal year at 30 percent of the appropriation to prepare for unanticipated construction requirement increases. (25 words)

Consider the reader's problems in trying to follow the 164-word passage. The reader stumbles through a passive tense to visualize multiple verbs separated from their subjects. Placing modifiers between the subject and verb separates the action from its source. The reader loses comprehension attempting to match a verb with its subject instead of concentrating exclusively on the message. The linking verb substitutes presumption for missing content. Using more than one action verb per sentence forces the reader to visualize two different actions simultaneously.

Watch the 164-word message shrink to 25 words, step by step:

1. Determine whether the writing produces a specific decision, recommendation, correction, request, or authorization. If not, kill it.

The writing produces a specific recommendation.

2. Provide indisputable answers to the six traditional reporting questions — Who? What? When? Where? Why? How? Then combine the six answers into a new lead sentence.

***Who?** The commanding officer (should) **What?** prepare for unanticipated increases in construction requirements (in) **Where?** Project X **When?** next fiscal year **Why?** to prevent construction requirements from exceeding the approved level of program funding (by establishing) **How?** a contingency fund in the amount of 30 percent of appropriation.*

3. Consolidate all sentences with identical or synonymous verbs.

Construction requirements can exceed the level that is approved for program funding in unanticipated situations. A contingency fund in the amount of 30 percent of the appropriation that will prepare for such situations is recommended for Project X next fiscal year.

4. Reorder sentences by priority, leaving all generic and redundant sentences in a paragraph at the end. Then kill that paragraph.

A contingency fund in the amount of 30 percent of the appropriation that will prepare for unanticipated situations is recommended for Project X next fiscal year.

5. Place verbs immediately following their subjects without any interrupting modifiers.

It is recommended that you establish a contingency fund next fiscal year at 30 percent of the appropriation for Project X to prepare for unanticipated situations in which increases in construction requirements are beyond the level that is approved for program funding.

6. Eliminate all linking verbs — appear, become, feel, grow, seem, and any tense of the verb to be (am, are, is was, were, be, being, and been).

I recommend that you establish a contingency fund next fiscal year at 30 percent of the appropriation for Project X to prepare for unanticipated situations in which construction requirements increase beyond the approved program funding level.

7. Use one verb per sentence. Convert additional verbs into gerunds or infinitives by adding "ing" at the end of a verb or "to" before the verb.

Establishing a Project X contingency fund next fiscal year at 30 percent of the appropriation would prepare for unanticipated construction requirement increases. I recommend your approval of such a fund.

Or this slightly more concise version:

I recommend establishment of a Project X contingency fund next fiscal year at 30 percent of the appropriation to prepare for unanticipated construction requirement increases.

Experiencing several applications of the Optimum Legibility Formula enables the engineer to combine the seven steps and eventually perform them simultaneously. Apply it only when attempting to produce accurate, clear, and brief messages. Not all situations suggest its application. Each profession prescribes a writing style most beneficial to its members' interests. Attorneys perpetuate need for their services with perplexity. Politicians use empty rhetoric to maintain credibility while keeping their options open. Satirists, novelists, and feature writers set their audiences up for an entertaining climax by lulling them with tranquil passivity. Reporters inject irrelevant modifiers after names to protect themselves from libel suits.

In management, impetuous writing offers the most logical means of satisfying inevitable requirements for unnecessary and unread written communications. By demanding exact comprehension and a significant investment of employee reading time, engineers require written precision — every word contributing an essential and unique part of the intended message.

The Optimum Legibility Formula contradicts traditional American dialect by eliminating multiple verbs, all linking verbs, and — in effect — most modifiers. The formula achieves simplicity through precision, rather than through conversational rhetoric as in conventional approaches. The Optimum Legibility Formula produces no human interest and no contrived diplomacy; just the facts — all the facts.

Since its first appearance in professional literature 10 years ago, the Optimum Legibility Formula has generated debate over its utility with positive and extremely negative commentary published in both journals and textbooks. This author has received more than 100 letters from critics evenly divided in opinion over the potential return on the writer's time investment.

During my four years as a Washington, D.C.-based member of the

Central Michigan University graduate faculty, most students exhibited marked success in using the formula to simplify their writing; many found the Optimum Legibility Formula as a source of frustration and a constraint to their communication. But without exception, all students realized significantly improved scores on Rudolph Flesch's *Readability Test* and Robert Gunning's *Fog Index* after proper application of the formula.

Several months after a 1981 speech on the formula at Reid Memorial Hospital in Richmond, Indiana, an administrator reported on a noticeable reduction in typing load and an intention to automate its implementation with word processing. The formula has drawn mixed reactions from previous colleagues in six federal agencies. One former subordinate used the Optimum Legibility Formula in cutting the length of the *Export Administration Regulations*.

Reluctant to try the formula? Try a partial application by eliminating all linking verbs. They convey no meaning other than to imply a noncontingent absolute condition — a condition more precisely described by action verbs. Remember: engineering reflects the high est level of precision; and the linking verb reduces precision.

Even a simple statement improves with its elimination. "The driver mispronounced his name to the police officer" provides more meaningful information than "The driver appeared to be drunk." Or limit your application to keeping subjects and verbs together. Avoid writing that "The captain, in his first staff meeting since returning from Europe last month, announced plans for a reorganization." For full impact, write that "The captain announced plans to reorganize the division." If preferable, adopt the Optimum Legibility Formula in stages.

Written messages collide in the reader's mind with imagination, memory, and noise. Through selective neglect, readers abstract message components along with irrelevant information to form a perception — a perception often in variance with the writer's intent. The message yields a variety of reactions among different readers.

In a typical 100-word message, only 20 words contribute an essential and unique part as illustrated in the sample application of the Optimum Legibility Formula. Readers tend to skim written material by reading only the first and last paragraphs and then rereading the first paragraph. Critical middle sentences die a silent death.

Writing in the inverted pyramid style affords your message prime time exposure. Never overestimate the interest of your readers. A departmental personnel director tells the story of an award recipient discovering a substantive error in his citation some seven years later.

My former professor wrote this in a law journal article: *"The powerful thinker that expresses himself ineptly is a tragic figure, but the glib stylist with nothing to convey is a confounded nuisance to everyone but himself."*

Right now in some organization, a lazy writer gorges an incomplete message with fat to avoid responsibility for missing information.

An ambitious writer creates an unnecessary message to reinforce an unrelated impression in the reader.

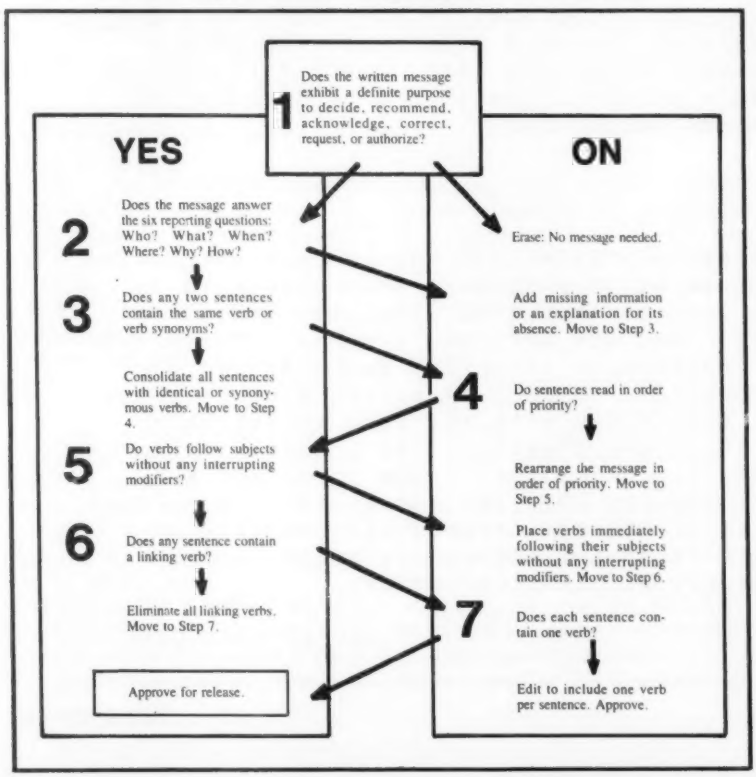
A pretentious writer generates another unnecessary message just to correctly apply a recently acquired word or perhaps to infer a false sense of understanding about information already known to the reader.

Meanwhile, an insecure writer forces a convoluted message to avoid responsibility for any meaning. Not typical? Wrong. Most so-called normal individuals drift in and out of behavioral patterns exhibiting characteristics of the lazy, ambitious, pretentious, and insecure writers when placed in the environment of a competitive organization.

The Optimum Legibility Formula prevents subconsciously ulterior motives from reducing the legibility of the visual image implanted in the reader's mind. The most powerful writing evokes a concrete visual image in the reader's mind. Total reader comprehension requires perception of an image with optimum legibility. But, ulterior motives compel writers to obstruct the reader's views of their thoughts.

Writers need a formula to stop these motives from destroying their work. For best results, write as quickly as possible without premeditated compliance with any rules. Then apply the Optimum Legibility Formula. As for the professor's use of linking verbs and flagrant separation of subjects from verbs? He could not have said it better. □

The Optimum Legibility Formula


1
Does the written message exhibit a definite purpose to decide, recommend, acknowledge, correct, request, or authorize?
YES
ON
2
Does the message answer the six reporting questions: Who? What? When? Where? Why? How?
3
Does any two sentences contain the same verb or verb synonyms?
Consolidate all sentences with identical or synonymous verbs. Move to Step 4.
5
Do verbs follow subjects without any interrupting modifiers?
6
Does any sentence contain a linking verb?
Eliminate all linking verbs. Move to Step 7.
Approve for release.
Erase: No message needed.
Add missing information or an explanation for its absence. Move to Step 3.
4
Do sentences read in order of priority?
Rearrange the message in order of priority. Move to Step 5.
Place verbs immediately following their subjects without any interrupting modifiers. Move to Step 6.
7
Does each sentence contain one verb?
Edit to include one verb per sentence. Approve.

situation report

departments

PROJECT BEST (Base Engineering Support, Technical) - Sponsored by CNO and funded through the OSD Productivity Investment Fund Program, BEST is a NAVFAC managed project to develop and install an automated Public Works Department (PWD) management system. The simple, user-friendly, on-line system of standard software and hardware will save the typical PWD about $400,000 per year. The system comprised of independent subsystems for maintenance control, family housing and transportation, is now being tested at CBC Port Hueneme and NAS Miramar (transportation only). Installation, including extensive on-site training and assistance, will begin at the first of approximately 80 PWDs in late FY84.

(NAVFAC Code 10)

NAVAL MOBILE CONSTRUCTION BATTALION (NMCB) WEAPONS MODERNIZATION - In conjunction with efforts over the past year to update the NCF Defensive Military Mission, several new weapons will be appearing for the Seabees over the next several years. The product-improved M16A2 will replace the M16A1. LAWs will gradually be phased out with no replacement. Mark 19 40MM automatic grenade launchers will be added and until they are available, M2 50 caliber heavy machine guns will serve as an interim substitute. M224 60MM lightweight company mortars (LWCMS) will replace the M29 81MM mortars. Other weapons currently in the NMCB allowance will remain unchanged. These changes were made after careful evaluation of the potential threat to the Seabees in a contingency as well as USMC procurement actions.

(NAVFAC Code 06)

MICROCOMPUTERS AT NAVFAC AND THE FIELD ACTIVITIES - The advent of more powerful, less costly Microcomputers in the market place has created a need to establish management controls on acquisition and use of these systems. The Director of Programs and Comptroller at NAVFAC Headquarters has convened an Ad Hoc committee to discuss microcomputer issues and develop a policy consistent with the need to establish management controls which are flexible, but insure some degree of compatibility among microcomputers. The committee met during the week of 17 January 1983 and successfully completed its work. The results of the committee's efforts will be published in a Command directive addressing policy and procedures for microcomputer acquisition and use.

(NAVFAC Code 01)

ENCROACHMENT

How would you – the collateral duty PAO deal with it?

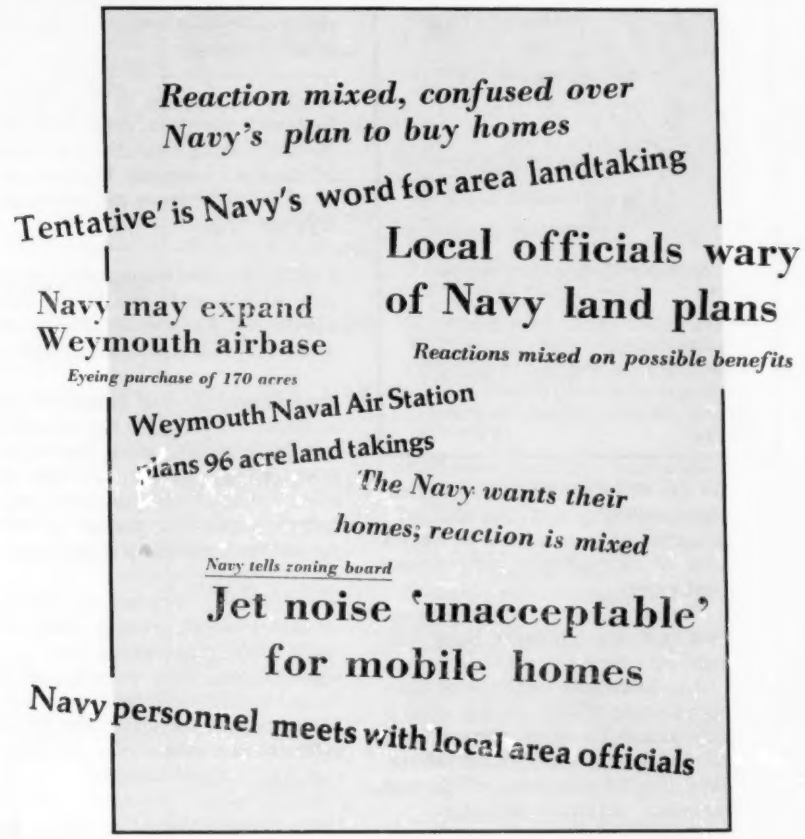
By LCDR JAMES C. HAUG, CEC, USN
P.E., California
Director, Facilities Planning Division, CECOS

• Port Hueneme, Calif.

Every officer in the Civil Engineer Corps has, at one time or another, the potential opportunity of becoming the collateral public affairs officer for his or her command. This assignment will introduce an entirely different set of responsibilities to accomplish. One of them involves communicating with the local civilian community — to inform them of the Navy's mission and events, and also, for solving any problems that may arise between the Navy and the community. One of those problems could involve the Navy's acquisition of land and the perception of encroachment.

Imagine yourself as the public affairs officer of a naval air station in a relatively urbanized part of the United States. How would you handle this situation:

- You have just finished providing testimony at an evening local planning board meeting concerning the potential rezoning of property outside of the station boundaries, but within a runway clear zone. A reporter approaches you from a local newspaper and suggests that your mentioning of the station's pre-final master plan and possibility of eventual Navy ownership of the clear zone will be a page one story in tomorrow's edition.
- The public affairs officer calls you at mid-morning and informs you that a local TV station crew will be arriving tomorrow to interview the command concerning upset property owners affected by possible Navy acquisition of two clear zones. Some neighbors are refusing to ever sell, while others want to sell immediately. The C.O. prefers not to be interviewed, but allows you and the operations officer to face the camera.
- Your car pool partner calls you during supper at home to tell you about an article in the evening paper quoting the local congressman about the Navy's plans to possibly acquire the clear zones. He accuses the Navy of poor public relations and vows to fight the purchasing of even one square inch of property within his district.


Reaction mixed, confused over Navy's plan to buy homes
Tentative' is Navy's word for area landtaking
Local officials wary of Navy land plans
Reactions mixed on possible benefits
Navy may expand Weymouth airbase
Eyeing purchase of 170 acres
Weymouth Naval Air Station
plans 96 acre land takings
The Navy wants their homes; reaction is mixed
Navy tells zoning board
Jet noise 'unacceptable' for mobile homes
Navy personnel meets with local area officials

These scenes were not fabricated, but actually occurred during my collateral duty responsibilities for Air Installation Compatible Use Zone (AICUZ) issues. The perception of encroachment develops quickly on both sides of the Navy-community equation. Residents find it difficult to live with the uncertainties of Navy programming constraints. Nothing is more threatening to some individuals than the potential for displacement, despite the undisputed inherent dangers of living at the end of a runway.

Dealing effectively with community leaders and opinion makers is often foreign to those of us accustomed to the military environment and orderly, controlled decision-making. It is often a shock to shift from the atmosphere of authoritarianism to consensus approach problem resolution and political opportunism.

The general public, however, has a deep-rooted respect and appreciation

NAVAL AIR STATION
SOUTH WEYMOUTH
CLEAR ZONE LAND AQUISITIONS P-146 & 155
NOTE
EXACT LOCATIONS OF THESE BOUNDARIES SUBJECT TO ACTUAL LAND SURVEY

Projects which call for the acquisition of developed property can often require much time and energy due to the impact it will have on existing owners and tenants. Expect plenty of community interest.

for the Navy's mission and professional credibility, and can normally be counted upon to understand the Navy's view of encroachment and mission-impairment.

The key to success is a continuing, trusting dialogue between Navy officials and community spokespersons.

It is comfortable when this dialogue occurs on the Navy's turf, but when it must occur off base, be prepared for a different format, where you are vulnerable to detailed questioning, off-the-wall comments, and cross-examination.

The comfortable structured format of the weekly department head meeting with your C.O. will seem a pleasure compared to late night agendas in classrooms turned into meeting rooms, and reporters faithfully recording every utterance.

More often than not your exact remarks will fade into distant memories. What will be remembered is your attitude, style, and tone of voice. To the local citizens, you don't just represent the Navy, you *are* the Navy.

There are few instances in your career when the term "pride and professionalism" will have greater meaning than when you face a room full of curious, demanding, tax-paying citizens. Take a deep breath, relax, and participate in the process. The checks and balances of the system we swear to defend are at work in your own backyard. Beware of the following pitfalls.

PITFALLS TO AVOID IN SOLVING ENCROACHMENT PROBLEMS

Poor Communication Skills — Remember to brush up on your active listening ability and try to be sensitive to the needs of the community.

Keeping Information to Yourself — Keep your command, major claimant, and Engineering Field Division (EFD) informed at a minimum. Forward copies of correspondence and newspaper clippings frequently.

Little Background Preparation — Read your AICUZ study and Master Plan thoroughly. Review the files to see what your predecessors have stated.

Not Following the A-95 Review Process — Ensure that your EFD had forwarded appropriate projects, plans, and reports to both the State and area-wide clearinghouses. It is advantageous to have a buffer of professional planners between you and local, regional or state officials.

Not Confirming Programming Reports — Double check automated reports which reveal programming years and cost estimates. Many projects can be "programmed" into future years by various resource sponsors having access to the data base without having a realistic chance for eventual execution.

Underestimating Media Coverage — Be prepared for local reporters to pick up on controversial issues, and publish incomplete and unsympathetic stories under deadline pressures. Try to maximize the use of the Public Affairs Office in answering routine request for information and to present factual data to the media.

Ignoring Command Guidance — Listen carefully to the direction and attitude of your Commanding Officer regarding sensitive issues. Remember who you report to, and avoid contradicting the style and substance of his/her remarks.

Dealing Directly With Affected Citizens — Deal with appointed or elected government officials who represent the local/state interest. Anticipate the active interest and participation of both federal and state congressional representatives from districts affected by Navy planned action.

Withholding Key Documents — The Freedom of Information Act will normally allow eventual release of unclassified documents. Why not build mutual trust and confidence by releasing appropriate documents before they are requested?

Inadequate Audio-visual Support — Slides, movies, and graphic presentation enhance the professional image of the presenter, while fostering communication and guiding verbal transactions. Ensure that a proper setting has been selected for meetings and seminars. Guest appreciate attention to detail.

MEDIA CHECK LIST

Local TV Coverage

- [ ] Dress your best, using service dress blue if appropriate.
- [ ] Repress bad habits, e.g., smoking, and scratching on camera.
- [ ] Speak slowly and clearly.
- [ ] Be aware of non-verbal clues you may project, i.e., frowns, smiles, and crossed arms or legs.
- [ ] Guard against mis-statements; reporters may refuse to retape your comments, and you are stuck.

Local Newspaper Coverage

- [ ] Provide background sheets on technical subjects.
- [ ] Verify all facts, especially dates and dollar amounts before release.
- [ ] Meet with editorial review boards if coverage seems slanted.
- [ ] Provide a list of properly spelled names, well-lighted tables and usable graphics to reporters.
- [ ] Clear interview sessions in advance through the C.O.; have the PAO present at all sessions with reporters. □

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Continued from front cover

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